

CA20NH0 76
-75P14

Government
Publications



The North Pickering Project

**Urban Employment
for North Pickering**
[Background Paper No. 14]

April, 1975



Ontario

Ministry of
Housing



This report was prepared as background material in the Planning of The North Pickering Planning Area and does not necessarily constitute a recommendation of the North Pickering Project nor approval of the Government of Ontario.

CA2ΦNHΦ 76
- 75P14

Urban Employment for North Pickering [Background Paper No. 14]

April, 1975



Digitized by the Internet Archive
in 2024 with funding from
University of Toronto

<https://archive.org/details/31761118926013>

URBAN EMPLOYMENT FOR NORTH PICKERING

CONTENTS:

PART I	THE PLANNING PROCESS
PART II	THE 'MARKET' SCENARIO
TECHNICAL APPENDIX	THE SERVICES SECTOR
PART III	THE 'IDEAL' SCENARIO

PART I

THE PLANNING PROCESS

PART I
THE PLANNING PROCESS

The North Pickering Planning Area is being planned to accommodate a viable agricultural as well as an urban community. In addition, the site may house a major recreational complex of regional importance. The Economic Planning Group of the North Pickering Project team was charged with estimating and planning the employment base for the urban community.

Planning by Objective

Planning the employment base for North Pickering was structured by a major goal for the New Community and its attendant objectives. These are:

GOAL To build a New Community in which residents may conveniently choose to both live and work.

- Objectives
- (i) To balance the number of jobs with the size of the labour force living in the New Community
 - (ii) To provide a wide range of job opportunities in office, professional and industrial employment
 - (iii) To encourage at least 50% of the New Community's resident labour force to both live and work in North Pickering
 - (iv) To take advantage of, rather than be dominated by airport employment.¹

¹ Prior to the decision to proceed with the New Toronto International Airport, this objective was necessarily modified by the condition, "if the proposed airport is built".

Planning Approach

Objectives are measures of achievement, necessary to attain a goal. This being so, the planning approach necessitated:

- a) attaching realistic figures, which could be measured, to the objectives;
- b) assessing the likelihood of achieving these defined objectives under the various sets of conditions likely to arise;
- c) determining the gap, if any, between the measured objectives and the employment base which market forces were likely to induce "naturally" in North Pickering; and
- d) if a gap existed determining under what conditions and using which implementation strategies, it might be reduced or closed.

Since most of the planning process was characterized by some uncertainty as to whether the New Toronto International Airport would be constructed, the objectives were measured and as much of the planning as possible was undertaken, assuming no N.T.I.A. Where relevant, tests were made, both "assuming no N.T.I.A. and "assuming an N.T.I.A.". The task of assessing the likelihood of attaining the objectives was also undertaken both "assuming no N.T.I.A." and "assuming an N.T.I.A.". Consequently, it is now possible to provide a picture of the New Community's employment prospects, irrespective of the airport, and then to discuss additional employment or changes in the mix of employment which the presence of the N.T.I.A. may help to induce in North Pickering.

A further aspect of the planning process was the necessity to determine what size of community would make possible the meeting of the economic planning objectives.

Since there would be no point in retaining objectives which are demonstrably unattainable, the tasks of defining objectives numerically and assessing the probability of meeting them are interdependent. For example, before Objective (i) could be retained, it was necessary, not only to estimate the probable size of the New Community's resident labour force and therefore the number of jobs required to match it, but to determine the feasibility of providing this number of jobs in North Pickering.

Also to be taken into account is the interdependency between objectives. If it is assumed necessary to attain all the objectives in order to reach the goal, then how far and in what way will the goal be affected, if one or more of the objectives proves unattainable or only partially attainable?

Because of these two sets of interdependencies, the problems of measurement and assessment can, in a sense, be described as requiring "simultaneous solution".

Determining the Size of the Community

Several major results of urban systems analyses were used in determining what size of community was viable from the economic viewpoint. To obtain these results, it was necessary to analyse the economic base of a range of towns

within the Central Ontario Lakeshore Urban Complex (COLUC) and within central southern Ontario, and to account for the differences between them in terms of the relative size of individual towns, the distance relations between them and the distance relation between these urban places and Toronto. These kinds of task are called urban systems analyses. The results utilized were:

1. The activity rate (total employment as a percentage of population) of a town tends to increase as the size of town increases.
2. A town of a given size in southern Ontario which shares the influence of Metropolitan Toronto but is not dominated by that influence is likely to have a considerably higher activity rate than a town of the same size which is dominated by Metro.
3. The difference between the activity rates under these different conditions is mainly accounted for by the difference in the amount of manufacturing activity and the amount of service activity which can be attracted under these different conditions.
4. Manufacturing and service employment do not increase steadily as the size of town increases. While particular towns may vary considerably, due to the particular circumstances which attach to them, in a general way, manufacturing and service employment increases fairly steadily up to a certain size of town, then 'jumps' and then levels off.

The following generalized table serves to illustrate how the activity rate increases as the size of town increases and the kind of "jump" manufacturing employment and service employment tends to take.

GENERALIZED URBAN POPULATION AND EMPLOYMENT
RATE PATTERNS IN CENTRAL SOUTHERN ONTARIO (1970/72)

	%	%	%	%	%	%
E_m/P	9.0/15.0	15.0	20.0	19.0	18.0	16.0/17.0
E_s/P	5.0/8.0	7.0/8.0	10.0	15.0	15.0	15.0
E_r/P	3.0/6.0	4.0/5.5	4.0/5.0	4.0/5.0	4.0/5.0	4.0/5.0
T_e/P^*	17.0/29.0	26.0/28.5	34.0/35.0	38.0/39.0	37.0/38.0	35.0/37.0
Population	36,000	60,000	80,000	100,000	120,000	150,000

E_m/P = Employment in manufacturing as a % of population

E_s/P = Employment in services as a % of population

E_r/P = Employment in retail as a % of population

T_e/P^* = Total employment as a % of population = Activity Rate

* Excluding Construction and Wholesale

SOURCES: The "Market" Profiles for North Pickering: Some First Impressions, North Pickering Project, 1974.
Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project, 1974, see in particular, Figures 3, 6 and 8.

These generalized figures cannot, of course, take into account that a new community might be more attractive than average, or that it might have a special advantage, such as being close to Metropolitan Toronto, which has a shortage of available, serviced industrial land; but they do serve to indicate that size of town itself, beyond a population of about 80,000, is not likely to much increase the percentage of manufacturing activity which can be attracted.

The question of how much service activity might be attracted to North Pickering raised different considerations. Data on the service industries is scarce and poor but, from observation and experience, it is known that manufacturing activity is usually accompanied by some office employment and that some personal and convenience services, such as hairdressers and dry cleaners, tend to follow population. To this extent, the amount of service activity is also dependent on the size of town.

The relative scarcity of service employment in places dominated by Metropolitan Toronto is probably in the higher-order professional services to business and management and in the higher-order personal services of, for example, health and education.

At the same time, it is thought that the very high mobility of people who live in COLUC has increased the frequency of "multi-purpose trips", say for shopping, entertainment and personal services, and that Toronto is the focal point of many of these trips. Consequently, places outside Toronto

but close to it may be decreasingly attractive to personal and convenience services and some retail activities.

From the generalized table, it can be seen that the percentage of service employment tends to level off at a population of about 100,000; but since the New Community will be close to Toronto, it seemed unlikely that increasing the size of the community much above 80,000 people would, of itself, contribute greatly to increasing service employment. On the other hand, if business and management services could be attracted to North Pickering, then its proximity to Toronto would probably be more advantageous than an extra 20,000 people because of the need for intensive contact between various parts of the higher-order services sector. At the same time, an increase in population was in potential conflict with another major goal of the North Pickering Project, the preservation of as much good agricultural land as possible. Therefore, it was determined that approximately 80,000 (say 70,000-90,000) was sufficient population to provide the major employment components, excepting the services, and not likely to seriously worsen the problem of attracting the service industries to North Pickering.

The validity of this population figure was then tested and confirmed in Lowry Model Analyses, Phase II.²

Quantifying the "Live/Work" Objective

Before Objective (iii) could be maintained, it was necessary to establish that encouraging at least 50% of the New Community's resident labour force to both live and work in

² See, Lowry Model Analyses of North Pickering, Phase II, B.G. Hutchinson, P.Eng. Waterloo, North Pickering Project, 1974.

North Pickering was feasible.

The New Community will be built in perhaps the most economically active region in Canada. It will be set in the eastern sub-region of COLUC, of which Oshawa has been designated by the Province as the sub-regional centre. North Pickering together with the N.T.I.A. is seen as one of the five major poles which will provide the economic structure of COLUC.³ It was therefore necessary to gain some initial understanding of how the New Community might affect and be affected by the complex economic relations of which it will become a part.

The year 1986 was chosen as a planning horizon year, with the recognition that it probably represented a planning horizon period, say 1986-91; various population and employment base sizes were postulated for North Pickering; population and employment figures for urban places in the region were obtained from the Regional Planning Branch of the Ministry of Treasury, Economics and Intergovernmental Affairs (TEIGA) and generated from the TARMS data bank;⁴ and additional, optional, planning figures for Oshawa/Whitby were obtained from TEIGA. A version of the Iterative Lowry Model was then used to test the likelihood of these various population and employment projections being met. The Lowry Model is a land

3 Central Ontario Lakeshore Urban Complex, COLUC Task Force Report, December, 1974.

4 Toronto Area Regional Model Study, Ministry of Transportation and Communications, Planning Division, on-going exercise.

use allocation model. It permitted the testing of alternate economic scenarios (or "pictures" of population and employment) for North Pickering within a regional setting under alternate planning population and employment figures for Oshawa/Whitby.

From the point of view of the planning approach, the major result of this exercise was affirmation of the very high mobility of the people of the lakeshore region. Many people live in one urban place and work in another.

Within the constraints of the modelling exercise, the other significant results were:

- . North Pickering was more likely to attain the population figure fed into the model if that population figure were larger
- . North Pickering was more likely to attain the employment figure fed into the model if the N.T.I.A. were built
- . In every tested combination of population and employment for North Pickering and Oshawa/Whitby, within the region, Oshawa/Whitby always exceeded its population and employment goals.⁵

Since this exercise was completed, more recent data on place of work and place of residence has become available from the 1971 Census. The Table on page I-10 displays pertinent relationships developed from this data, for a

5 For a complete description of this exercise and detailed results, see The Iterative Lowry Modelling Exercise: Phase I: The North Pickering Project's Lowry Manual, North Pickering Project, 1974.

RELATIONSHIPS DERIVED FROM 1971 CENSUS
PLACE OF WORK AND PLACE OF RESIDENCE DATA

<u>Municipality</u>	<u>Resident Labour Force</u> Population	<u>Jobs</u> Population	<u>Jobs Resident Labour Force</u>	<u>Work & Live Resident Labour Force</u>
Bowmanville	.391	.414	1.06	.574
Newcastle	.417	.355	.85	.407
Oshawa	.414	.422	1.02	.707
Ajax	.439	.494	1.13	.377
Whitby	.398	.366	.92	.450
Pickering V.	.431	1.143	2.65	.214
Brockville	.394	.231	.58	.487
Scugog	.403	.146	.36	.309
Brampton	.464	.457	.98	.512
Mississauga	.440	.375	.85	.330
Etobicoke	.472	.353	.75	.353
Scarborough	.454	.280	.61	.370
York	.491	.238	.48	.101
E. York	.537	.189	.35	.089
N. York	.470	.310	.66	.327
Toronto	.503	.780	1.55	.676
Hamilton	.532	.472	1.09	.809
Aurora	.408	.304	.74	.328
Markham	.412	.313	.76	.267
Newmarket	.413	.326	.79	.426
Richmond Hill	.440	.255	.58	.303
Burlington	.422	.248	.59	.395
Milton	.443	.630	1.42	.641
Oakville	.435	.403	.92	.522
Pickering	.392	.118	.30	.128
Whitby E.	.397	.129	.32	.173
Chinguacousy	.413	.364	.88	.259
Toronto Gore	.425	.157	.37	.163
Port Credit	.512	.074	.14	.238
Streetsville	.457	.312	.68	.327
Metro	.484	.460	.95	.846

SOURCE: Statistics Canada, 1974.

selected range of municipalities in central southern Ontario. The last column of the table, giving work and live figures as a percentage of resident labour force, indicates how few places have a live/work relationship of 50% or greater.

The second last column indicates the number of jobs available per member of the resident labour force. By comparing the last two columns, it can be seen that most places which have a live/work ratio of more than 50% also have a jobs/resident labour force ratio of approximately 1. For North Pickering, the implication is that approximately matching the number of jobs available with the size of the resident labour force will be a necessary condition for encouraging at least 50% of the New Community's resident labour force to both live and work in North Pickering.

Following a careful study of the work-trip results generated by the Lowry Model, which were substantially confirmed by more recent Census data, an examination was made of the distribution of housing and employment opportunities in the region.

These exercises led to the conclusions that:

- . few urban places offered commensurate housing and employment opportunities so that the high commuting rate may result from necessity rather than choice⁶
- . the commuting rate was so high and so consistent throughout the region that the only safe assumption

6 For verification of this observation, at least in Mississauga, see Mississauga Transportation Planning Study, Peat, Marwick and Partners, (Toronto), 1974.

was that the goal of a "live/work" community would be difficult to attain

- . in these circumstances, encouraging at least 50% of the New Community's resident labour force to both live and work in North Pickering was a reasonable, but ambitious objective.

Estimating the Size of the Resident Labour Force

Some British and European new towns have displayed a younger-than-average population because recently married couples and young parents with small children tend to be attracted by the housing opportunities offered. Were this to happen in North Pickering it might reduce the number of women actively seeking employment and therefore the number of jobs required to match the size of the resident labour force.⁷ On the other hand, the projected structure of the Canadian population is such that the number of people between the ages of 20 and 60 is likely to increase over the next 15 years or so.⁸ This, taken together with the increasing participation of women in the labour force and the likelihood of people in their 20's and 30's being attracted to a New Community could mean that the number of people living in North Pickering and actively seeking employment would be higher than average.

7 The possible implications of a low activity rate were tested in the Lowry Modelling Exercise, Phase I.

8 TEIGA Population Projections, 1974.

Since neither set of atypical conditions could be postulated with a useable degree of certainty, the estimate of the size of North Pickering's labour force was made using Provincial figures. The result was then translated into a comparable urban activity rate. The proved to be approximately .42.⁹ Therefore, before Objective (i) could be maintained, it was necessary to demonstrate that the number of jobs which could be attracted to North Pickering would, when expressed as a percentage of the population, produce an activity rate of approximately .42.

The average activity rate for COLUC is also about 42% and the COLUC Task Force used a projected rate of 46% for the middle 1980's.¹⁰ These figures assist in placing a possible 42% activity rate for North Pickering in perspective. Naturally, the average rate for COLUC includes the high incidence of employment in Toronto, as well as the much lower activity rates of some urban places which are dominated by Metro. (See the Jobs/Population column in the table on page I-10.)

Estimating the Activity Rate for North Pickering

The results of two major sets of tasks were utilized for this purpose: the urban systems analyses and the analyses of the secondary sector, principally manufacturing, in the greater Metropolitan Toronto area. Regrettably, the data available

⁹ See Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project, 1974, p.48.

¹⁰ Ibid.

at that time, did not permit a similar analysis of the services sector. Somewhat later in the planning process improved services data became available and permitted an intuitive and statistical analysis of the services sector, the results of which are provided in the Technical Appendix to Part II of this Report.

Since urban systems analyses and analyses of specific locational factors which attract secondary industry, and so influence the demand for available serviced industrial land, are both concerned with the workings of market forces, the estimation of an activity rate for North Pickering also provided a picture of the kind of employment base which market forces might induce "naturally" in the New Community.

When the urban systems analyses had been utilized to establish a base population of 70,000 - 90,000, it had also produced a first, crude approximation of the level of economic activity which might be associated with an urban community of this size (See Generalized Table on page I-5). Once a base population had been established, it was possible to further use urban systems analyses to develop more detailed estimates of the kind of economic base North Pickering might have.

To clarify the probable extent of Metro's influence, these estimates were first prepared using a regional perspective and then modified to illustrate extreme and less extreme conditions of metropolitan dominance in the central Ontario

lakeshore area. From a regional viewpoint, a North Pickering of roughly 70,000-90,000 people could have an activity rate of 44-45%. Depending on the extent of Metro's dominance the activity rate for a North Pickering of the same size could drop to 30-36%.

Illustrative pictures or "scenarios" of these various possible economic bases are as follows:

	Extreme Metro Dominance Activity Rate 30	Metro Dominance Activity Rate 36	General Metro Region Activity Rate ¹¹ 45
Manufacturing	14	19	24
Wholesale & Construction	5	4	5
Retail	3	4	5
Service	8	9	11
	<u>30</u>	<u>36</u>	<u>45</u>

Clearly, the activity rate of 42% required to maintain Objective (i) is 6 points higher than a rate illustrative of Metropolitan dominance, 12 points higher than a rate illustrative of extreme Metropolitan dominance, and 3 points lower than a rate illustrative of a place set within the general Metropolitan region.

If the urban systems analyses can be described as producing "average" or "central tendency" results of systems regularity, then the question which it does not answer can be phrased, "how

11 For a detailed discussion of the problems of estimating various employment bases for North Pickering, see The "Market" Profiles for North Pickering: Some First Impressions, North Pickering Project, 1974; Urban Systems Analysis: A Literature Review, North Pickering Project, 1974; Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project, 1974; Urban Systems Analysis: Synthesis & Implications for North Pickering, North Pickering Project, 1974.

far is North Pickering likely to be atypical?"

Further, it can be asked, "If an activity rate of 42% can be implemented in North Pickering, in what sector is the bulk of its economic activity likely to occur and how will this affect the mix and variety of job opportunities available in the New Community?"

The results of the studies made of the secondary sector showed that North Pickering is a very attractive location for manufacturing employment. North Pickering finds itself:

- (a) in proximity to Metropolitan Toronto, with a potential supply of industrial land approximating one year's demand for the whole Toronto region, according to present trends;
- (b) located in a region facing a demand for available, serviced industrial land likely to be equal to if not greater than its supply;
- (c) necessitated by its objectives to match housing and job opportunities, and
- (d) with the planning potential of building an attractive and prestigious community.

Its ability to successfully market its available, serviced industrial land therefore seems assured.¹²

12 The studies made in assessing North Pickering's attraction for manufacturing employment are: Identification of Manufacturing Growth Industries, NPP, 1974; Industrial Location Patterns, NPP, 1974; Location & Site Requirements of Secondary Industry, NPP, 1975; Input/Output Study for Industrial Linkage Requirements, NPP, 1975; Identification of Most Probable Industries, NPP, 1975.

Consequently it was determined that selecting the manufacturing component of 24 points from the "high" activity rate of 45% (see page I-15) was justified in the case of North Pickering. When this component is added to the remaining components drawn from the lower activity rates of 30-36%, it is apparent that an activity rate of 42% is feasible for the New Community and permits the retention of Objective (i).

Estimating the "Gap"

In the services sector, there were no known grounds for assuming that the New Community could perform any better than average. It was therefore apparent that the mix of employment which market forces were likely to induce in North Pickering would not provide the wide range of job opportunities postulated in Objective (ii).

It remained, and remains, a problem to postulate an employment base for North Pickering which would both provide a wide range of job opportunities and be demonstrably feasible within COLUC, thus rationalizing the retention of Objective (ii). This is because, within COLUC, the only urban places, except downtown Toronto, which has a relatively large and diversified service sector is Don Mills. Consequently, an analytically based hypothesis for North Pickering cannot be constructed. Some urban places in COLUC do have an atypically large, but not necessarily diversified service sector (see Technical Appendix to Part II of this Report) but these probably represent situations peculiar to a

certain town which are not likely to be replicated in North Pickering.

Nevertheless, for planning purposes, it was desirable to say a little more than the fact that market induced employment in North Pickering would not meet Objective (ii) because it was likely to be deficient in service employment. Consequently, a "working" or unsubstantiated version of an "ideal" employment base for the New Community was rationalized as follows:

The total activity rate of 42%, postulated as feasible under market conditions, was retained, since there is no reason why the required number of jobs should not be implemented in North Pickering. On the grounds that in the economic context of COLUC, it was most unlikely that the New Community could ever rely to a less than "minimum average" extent on secondary employment, 19-20 component points of secondary activity (manufacturing, wholesale and construction) were drawn from the "low" 30% activity rate profile (see page I-15). Then, 4-5 points were assumed for retail employment (see Generalized Table, page I-5). This left a minimum of 17 component points to be accounted for by service activity. These assumptions provide a rough, "ideal" scenario as follows:

Secondary employment	20
Retail employment	5
Services employment	<u>17</u>
	<u>42</u>

To the extent that these assumptions are valid, then the "gap" between the employment mix which market forces are likely to induce in North Pickering and the wide range of job opportunities called for by Objective (ii) is 8-9 component points of service activity, i.e. The 17 points of service activity postulated in the "ideal" scenario, minus the 8-9 points of service activity, principally in personal and convenience services, which market forces are likely to attract to North Pickering. If this "gap" is to be reduced or closed, then most of the required jobs must be office, technical and professional.

PART II

THE "MARKET" SCENARIO

PART II
THE "MARKET" SCENARIO

Definition

The postulated "market" scenario is defined as the employment base for the New Community which could be implemented, using market forces, and irrespective of the N.T.I.A. The possible effects of the new airport are separately noted.

The term "market" is used to distinguish this scenario from an "ideal" employment base, which would meet all the planning objectives. The "market" scenario substantially fails to meet the second of these objectives, viz. "to provide a wide range of job opportunities in office, professional and industrial employment", because the percentage of general office, technical and professional jobs which it could provide would be quite small. This type of employment, together with the provision of personal and convenience services, is commonly called service employment.

Approximately 60% of all employment in Ontario is now in the service industries and this percentage is expected to increase.¹ Consequently, many of the children of the first settlers in the New Community can be expected to work in the service industries. If a sufficient number of service jobs cannot be attracted to North Pickering by, say the

13 See for example, the Ontario Economic Council's Ontario: A Society in Transition, Toronto; (1972) and The Service State Emerges in Ontario, The Evolution of Policy in Contemporary Ontario, Vol. III, (1974).

early 1990's, then this second generation labour force must either leave North Pickering, or commute out to work. Therefore, even though it remains feasible to implement a "live/work" community based on this "market" scenario, the desired live/work relationship may not hold beyond the first generation.

Distribution of Jobs

Assuming that a population of approximately 75,000 can be comfortably accommodated on the east side of the West Duffin, and using an activity rate of .42, the required number of jobs would be 31,500. This postulated "market" scenario distributes these jobs as follows:

Manufacturing employment	.24	Approx.	18,000 jobs
Retail employment	.05	"	3,750 jobs
Wholesale & Construction employment	.04	"	3,000 jobs
Service employment	<u>.09</u>	"	<u>6,750 jobs</u>
	<u>.42</u>		<u>31,500</u>

For planning purposes, both in measuring the objectives and assessing their viability, and also for the purposes of monitoring progress as the New Community is implemented, neatly rounded numbers have been used in this scenario. The real world is seldom so tidy. Consequently, all figures used in the scenario should be treated as approximations. The picture is satisfactory in terms of the total number of jobs. The employment base would, however, be relatively

homogeneous. The provision of education, health, social and recreational services, necessary for a community of 75,000 people would produce some variety in the service sector but, for the most part, service jobs would provide personal and convenience services and so would produce much the same "picture" as retail jobs. The employment base would be heavily dominated by manufacturing. North Pickering would be a town in which most people worked in secondary industry and the remainder in stores and other small establishments.

Manufacturing Employment

Two complementary approaches were used to determine the types of industry likely to be attracted to the North Pickering site, those which it would be desirable to attract and where these categories overlapped. Those most likely to be attracted are detailed in the Background Paper entitled The Identification of Most Probable Industries, which shows that of the one hundred and twelve (112) manufacturing industries identified at the three digit level in the Standard Industrial Classification, forty (40) fall into this category. These 40 are drawn from the following major industrial groupings: food and beverage; rubber and plastics; wood industries; furniture and fixtures; paper and allied; printing, publishing; metal fabricating; machinery industries; transportation equipment; electrical products; non-metallic mineral products; chemical and chemical products; miscellaneous manufacturing industries.

A range of criteria was used to establish these most probable industries and among these, emphasis was placed on footloose industries and on industries which are growing in terms of number of establishments, total employment, wages and salaries and productivity. At the two digit level, nine of fourteen categories identified as probable, also contain growth industries. Consequently, a high percentage of probable industries are also desirable industries.

The initial list of probable industries was culled to eliminate any which, for environmental or other reasons, would not be suitable for the New Community. For example, iron and steel mills and iron foundries were identified as probable and desirable in terms of employment and productivity, but were eliminated because they are heavier users of water than could be accommodated on the North Pickering site.

Before any industry was transferred from the initial list to the list of most probable industries, its location requirements were checked to ensure that these could be met at North Pickering.

This approach was supplemented by a study of the linkage requirements of industry, based on the Province's Input/Output Table (see Background Paper, Input/Output Study for Industrial Linkage Requirements), which verified that all these requirements for the most probable industries could also be conveniently met at the North Pickering location. Linkage requirements are interdependencies, in terms of the essential inputs of some industries being the outputs of other industries, and also in terms of the chain reaction through the industrial

sector caused by a change in final demand for some product or products.

By checking the income and employment multipliers, those industries which have the largest total income effect, those industries which are key sectors or potentially key sectors, and those industries which draw on many suppliers and therefore can have a stabilizing effect on the employment base of a given town or area, the Input/Output Study also contributed to the identification of industries which are both probable and desirable for North Pickering.

At the same time, the Input/Output Study identified several industrial "clusters" which it would be both feasible and desirable to locate in North Pickering. Neither "cluster" nor "complex" development is typical of the lakeshore area, possibly because of the integrated way in which the whole regional economy functions. For the same reason there may not previously have been a sufficiently strong incentive to deliberately plan for this type of development. But traditionally, the eastern sub-region has lagged somewhat in relation to the rest of the area. The location of clusters and of a strong industrial complex could well assist in off-setting this.

A cluster is a group of economic activities with similar locational patterns, and by inference, requirements, but which may or may not be functionally related. The fact that its elements have similar location requirements suggests

that it is feasible to locate the elements of a cluster simultaneously or in very close sequence. It is desirable to do so because the locational "pull" of such a nucleus is likely to expand the size of the cluster fairly quickly.

The clusters identified as suitable for location in North Pickering are: electronics components manufacture, which can also associate with two other parts of the electrical goods industry, electrical testing and distributing equipment, and communication equipment, to form a larger cluster; and metalworking and machine building industries which, at a higher level of aggregation can form part of a super-cluster, metal products, machinery and equipment, and precision instruments.

In addition, the metalworking and machine building cluster is a close approximation of a metalworking "complex". A complex is a group of functionally related industries, the presence of which normally fosters economic development. Since many of the elements of this complex could be put in place as a cluster, it is reasonable to suggest that good strategic planning could also successfully locate the complex.

Lastly, the Input/Output Study identified miscellaneous manufacturing industries, a potential key sector in the economy of Ontario, as providing a range of possible "initial" industries and some "filler" industries for North Pickering. These industries are footloose and so potentially able to locate or relocate in a new community. They score above

average on the overall rating of linkages, multipliers and export-import position and rank fifth among forty-eight sectors in the central Ontario wage and salary multiplier scale.

This dual approach to searching out probable and desirable industries for North Pickering was taken for two main reasons: to plan for a strong and developing industrial base for the New Community, particularly if it is to be largely dependent on industrial employment; and by putting such a base in place in North Pickering, to make a contribution to the economic development of the eastern sub-region.

Airport Impact on Manufacturing Employment

Analyses have indicated that employment in certain types of industry (essentially selected growth industries with branches or head offices in other cities) is highly correlated with business air travel. In the last decade some 65% of the increase in employment in these industries for the whole Toronto Census Metropolitan Area (CMA) has located near Malton. Such firms feel that their senior staff, usually sales personnel and managers make frequent business trips by air so that a near airport location is not only convenient, it saves time and therefore money.

In addition an airport location is attractive because of the water and sewage services and good ground transportation that has been built to serve the airport. Some firms chose a near airport location because of the prestige and exposure it offers the firm's name and product. Conversely, studies

in the Toronto region afford little support for the conventional assumption that many firms locate next to an airport for convenience in shipping air cargo. The fact that goods to be shipped by air must first be transported to the airport by road irrespective of proximity results in any location which is reasonably accessible (say 10-20 miles distance) to a major airport being regarded as satisfactory.¹⁴

The N.T.I.A. as presently announced is to be "...a minimum international airport...to consist of only one runway and appropriate passenger terminal and related facilities. It is estimated that this limited programme can be operational to meet the peak seasons of 1979/80".¹⁵ The Toronto Area Airports Project (TAAP) office of the Federal Ministry of Transport estimates that the new airport will handle the bulk of international flights, of which approximately 40% are charters, will process 1.5-2 million passengers in the first two years of its operation and will employ in excess of 3,000 people by 1979. As presently envisaged, the N.T.I.A. will handle only minimal trans-border and short-haul connections, possibly about 3% of the total Toronto

14 For a full discussion of airport impact, see: The Nature of Development around Malton - Up-date and Progress Report, TAAP, MOT, Toronto, 1974; The Impact of N.T.I.A. Pickering on the Toronto Region: Base Population and Employment Forecasts with E.G.A.M.-55, TAAP, MOT, Toronto, December, 1974; Manufacturing Development in the Vicinities of TIA Malton and NTIA Pickering, TAAP, MOT, 1975.

15 Statement by the Federal Minister of Transport, The Honourable Jean Marchand, on The New Toronto International Airport (Pickering) February 20, 1975.

airports traffic of this type. Since it is to be an international airport, the N.T.I.A. will provide customs facilities.

When combined with the attraction for industry which the New Community has of itself, the added attraction of the proximity of the new airport may well facilitate the selection of strategically desirable industries for North Pickering.

If an increase in demand for air travel and air cargo facilities were to warrant the gradual increase in the size and complexity of the new airport, then as the airport developed its attraction for industrial location could be expected to increase. Whether or not the size of the new airport is increased, North Pickering's interest is in meeting its own employment objectives. Therefore, the planning process for North Pickering does not envisage that the industrial areas in North Pickering will be expanded for the purpose of accommodating additional airport-induced industrial employment.

Were the increase in air traffic to warrant it, then passenger handling at the N.T.I.A. might build up at the rate of 1-1.5 million passengers per year. This, in turn, could lead to the gradual putting in place of an airport at Pickering along the lines originally envisaged. Several studies (see Footnote 14) have examined the economic impact on the eastern sub-region of an airport of this scale and diversity.

It would be incorrect simply to add manufacturing employment estimates prepared by the North Pickering Project, to those prepared by T.A.A.P. The North Pickering estimates were prepared assuming no airport, but that the New Community could capitalize on prestigious planning and the advantage of its proximity to Metropolitan Toronto. The T.A.A.P. estimates took no account of the special advantages of the New Community. Both planning teams recognize that as a major capital investment a new airport will generate additional economic development; but, for the most part, a new airport is planned because expected overall economic growth is likely to generate the increased demands for air travel and air cargo which necessitate its construction. Roughly speaking, therefore, the T.A.A.P. impact estimates are made up of two parts: that portion of manufacturing employment resulting from overall economic growth which is likely to be attracted to the eastern sub-region due to the presence there of the N.T.I.A.; and that portion of additional growth resulting from the capital investment of the N.T.I.A., likely to be attracted to its vicinity. The T.A.A.P. estimates for North Pickering are probably understated by the attraction factors of the New Community. The North Pickering estimates are probably understated by the attraction factor of the N.T.I.A. and by the New Community's likely share of the new, airport-induced growth.

Retail Employment

The urban systems analyses, for which the data available had certain limitations,¹⁶ indicated that, on an activity rate basis the range of retail employment was probably from about 3-6% but concentrated about 4-5% above a population figure of approximately 60,000 (See Table on Page I-5 of this Report). When the 1971 Census place-of-work data became available, this range was shown to be somewhat greater, from 0.7-10.3%. An intuitive assessment of North Pickering's prospects, given this range and some explanation of its extremes, suggested 3.5%. A more rigorous regression analysis suggested 4.5%. (See the Technical Appendix to Part II of this Report.)

The amount of retail activity to be found in any town is largely dependent on the particular marketing circumstances which attach to that town. Consequently, an independent market study of the New Community's retail prospects was carried out.¹⁷ This study concluded that the following ranges of retail square footage requirements are reasonable for North Pickering, at a population size of 75,000.

16 Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project, 1974, See Appendix II.

17 Retail Market Study, Larry Smith Research, Ltd., North Pickering Project, 1975.

- for the central area 404,000 - 452,000 sq. feet
- for 4 district/commu-
nity shopping centres
outside the central
area 212,000 - 264,000 sq. feet
- for 10 neighbourhood
shopping centres 15,000 - 25,000 sq. feet

In order to estimate the retail employment possibilities associated with these retail floor-space ranges, current retail employment patterns for Metropolitan Toronto and the Regional Municipality of Durham were examined.¹⁸ There is considerable variation in retail floor-space/employee ratios, ranging from the City of Oshawa's 293 to Etobicoke's 382. The median for Metropolitan Toronto lies around 318. Scarborough and North York have ratios of 324 and 326 respectively. The Town of Whitby's ratio is about 359. High ratios of over 500 have been estimated for the Pickering-Ajax area.¹⁹

18 The data for Metropolitan Toronto were kindly supplied by the Metropolitan Toronto Planning Department. See the Metropolitan Toronto Statistical Series (October, 1974). The data for Durham were extracted from the Official Plan Discussion Paper No. 1, Regional Municipality of Durham, (October, 1974), pp.56-59.

19 There are minor definitional discrepancies between the retail floor space definitions used by the Metropolitan Toronto, North Pickering Project and Durham studies. The first two are closest. The Durham ratios are based upon assessment data and tend to overstate the floor-space ratio.

High and low employment range estimates for North Pickering have been estimated from the Metropolitan Toronto data.

They are as follows:

		<u>Total Retail Employment</u>
Upper-range possibility	-	2,330 jobs
Lower-range possibility	-	1,939 jobs

These translate into retail employment rates of 3.1% and 2.59% for a New Community of 75,000. These are regarded as under-estimates of retail employment prospects for North Pickering because they omit retail employment in concentrations other than shopping centres. The Metropolitan Toronto studies encompassed 52 shopping centres, including one centre with over half a million square feet floor space, 32 with 25-500,000 square feet and 19 with less than 25,000 square feet. The same surveys also covered retail "strips". Median employment ratios for older retail frontages were estimated at 16 employees per 100 feet frontage. Newer developments such as auto-oriented commercial tracts had median values of about 5 employees per 100 feet frontage. The retail study commissioned by the North Pickering Project confined its attention to retail centres. However, the degree to which the total shopping centre employment estimates above

understate total retail employment is uncertain. If a considerable proportion of the New Community's non-shopping centre retail concentrations are of high quality design with small courtyards and strong pedestrian emphasis, retail employment levels per 100 foot frontage could be high. However, it is clear that the ratios applied to North Pickering's district and neighbourhood shopping centres are not as employment-intensive as they might be. For working purposes it is postulated that the retail employment possibilities are more than likely in the order of 2,250-2,625 giving a retail employment rate range of 3.0-3.5%.

From the results of these various approaches it is apparent that .05% for the retail component in the "market" scenario is probably over-stated.

The types of retail activity for North Pickering suggested by the Retail Market Study are:

- two department stores
- five supermarkets, and other associated shopping facilities, such as
 - convenience stores
 - hardware
 - drugs
 - general merchandise
 - apparel/accessories
 - household furnishings, etc.

The Retail Market Study also deals with some other types of personal and convenience services and with some institutional services. In assessing the validity of the retail component of the market scenario, these convenience and institutional services have been omitted because, in the "market" scenario, they are dealt with under the component heading, "Services".

Airport Impact on Retail Employment

It is expected that by 1979, in excess of 3,000 people will be employed at the new airport. The number itself is not likely to effect retail employment in North Pickering. Some airport employees may choose to live in the New Community but the overall size of North Pickering's population has been set. However, since airport employees tend to earn somewhat more than do industrial employees, it is possible that the presence of airport employees among the customers of the New Community's retail establishments may lead to some change in the complexity of merchandise which is available for purchase in the New Community.

Were the airport to be expanded and a fairly high percentage of airport employees chose to live in the New Community, then in the longer run, this might lead to an increase in the size of the retail component of the employment base of North Pickering.

Wholesale and Construction Employment

A small survey of warehousing and wholesaling firms carried out by the North Pickering planning team showed that, because of its proximity to Metropolitan Toronto, the North Pickering site is an attractive one for wholesaling. However, wholesaling has fairly extensive flat land requirements and tends to employ fewer people per square foot than do manufacturing enterprises. For these reasons, it is likely that the amount of wholesaling which North Pickering can accept will be limited.

While the New Community is being built there will, of course, be a high component of construction activity on the site. But as buildings are completed, they will be utilized for residential, industrial and commercial purposes and so the intense construction activity has an interim or "roll over" effect. In the "market" scenario, it has been postulated that, when a population of approximately 75,000 is in place, the number of construction firms likely to locate permanently at North Pickering will be about average for a town of its size.

Airport Impact on Wholesale and Construction Employment

The presence of the airport can be expected to enhance the attraction of the North Pickering site for wholesaling and

distribution activities. But in the interests of maintaining the New Community's environmental and other objectives, it is unlikely that the amount of wholesaling activity accepted by the New Community will be increased.

The building of the airport means, of course, that there will also be intense construction activity adjacent to the New Community. Were the airport to expand, then this airport construction activity might continue at a fairly high level for some considerable time. Coincidentally, a growing airport would be likely to continue to induce considerable industrial and other economic development in the sub-region. This in turn would increase the demand for construction activity. While much of this activity would occur elsewhere, North Pickering might attract a larger number of construction firms to locate permanently.

In these circumstances the construction component of the "market" scenario could prove to be under-stated.

Service Employment

Whether or not the higher-order services to business management which provide a good variety of office, technical, professional and managerial employment opportunities can

be attracted to North Pickering, the lower-order services usually described as personal and convenience services, tend to follow population. In addition, the requirements of the population for education, health, social and religious services provide some technical and professional employment.

Lack of detailed data on the services sector obviated the possibility of detailing probable service industries as the probable secondary industries were detailed.

Earlier planning work, from which the estimate of 9 component points of service activity for the postulated "market" scenario was derived, had to rely on highly aggregated data for the service sector. When improved, place-of-work, services data from the 1971 Census became available, it was immediately subjected to both intuitive and rigorous statistical analysis. (See Technical Appendix to Part II of the Report) From these it was concluded that the 9 component points for service activity should be retained. On the basis of the analysis the figure is conservative. But North Pickering, in common with other places approximately the same distance from Metropolitan Toronto, might find that its population enjoys multi-purpose trips and so tends to travel out of the New Community to obtain some personal and convenience services.

Intuitive and regression analysis were also used to estimate the distribution of types of service activity which might occur within the 9% component. These compare as follows:

	<u>Intuitive</u> (No Activity Rate Assumed)	<u>Statistical</u> (Assuming 42% Activity Rate)
<u>S.I.C.* Division 9</u>		
Major Group 1 - Finance Industries	0.5	0.75
Major Group 3 - Insurance Agencies Real Estate Industries	0.3	0.63
<u>S.I.C.* Division 10</u>		
Major Group 1 - Education	2.4	0.32
Major Group 2 - Health & Welfare Services	2.8	2.8 **
Major Groups 3 & 4 - Amusement Recreation & Religion	0.4	0.59
Major Group 5 - Services to Business Management	0.5	0.96
Major Group 6 - Personal Services	0.7	0.74
Major Group 7 - Accommodation	0.9	1.05
Major Group 8 - Miscellaneous	0.4	.4 **
<u>S.I.C.* Division 11</u>		
Major Group 3 - Local Administration	<u>0.8</u>	<u>0.8 **</u>
TOTAL	<u>9.4</u>	<u>9.04</u>

* Standard Industrial Classification

** Intuitive estimate used.

Coefficient of Correlation not useful.

The statistical explanation for variation in employment in Health and Welfare Services is so low that it cannot be used. All the statistical inferences should be used with caution. However, most regressions provided useful estimates of employment rate possibilities. In consequence, a joint

intuitive-statistical interpretation is required.²⁰ Using the intuitive estimates for health and welfare services and miscellaneous services the following service employment rates were estimated from these regression analyses.²¹

Urban Place Activity Rate		30	36	42	
Service Sector Employment Rate	Estimate I -	7.55	N.E.P.	9.04	o/o
	Estimate II -	(6.23-11.47)	(7.6-12.8)	(8.96-14.2)	

N.E.P. - No estimate possible.

The three perspectives employed--urban systems analysis, intuitive inspection and statistical analysis--are markedly consistent and suggest the following service sector possibilities for North Pickering under the pertinent urban place activity rates.

Urban Place Activity Rates		30	36	42	
Service Sector Employment Rate		7.0 - 8.5		9.0 - 10.0	o/o

Independently, the Social Services Planning Group of the North Pickering Project estimated the number of personnel who will be required to provide a range of social, educational, religious and recreational services for the North Pickering Community. When these absolute numbers are translated into

20 For a complete description of this analysis of the service sector, see Technical Appendix to Part II of this Report.

21 These rates would have to be marginally augmented by the addition of employment rates in transportation, communications and other utilities and insurance carriers to make them perfectly comparable with the "service sector" used in the urban systems and previous analyses in the economic planning programme in the Project.

percentage points, they closely approach those parts of the intuitive distribution to which they refer.

Airport Impact on Service Employment

The new airport is likely to generate a demand for 400 to 500 hotel rooms²² for the convenience of passengers and flight crews. Assuming that it would not be convenient to provide this hotel accommodation in the new terminal, then it might be constructed within the New Community. Assuming that this hotel also provided restaurant and perhaps convention facilities similar to those which are provided by hotels in the vicinity of Malton, it would require the services of .6 persons per hotel room.²³ This would lead to the employment of 300 persons which translates into an activity rate component of .04. Since Mississauga, Etobicoke and Brampton, which contain accommodation generated by Malton, were included in the data base used to assess North Pickering's prospects, no change in the 9% postulated for the services sector was made. However, it can be seen from the table on Page II-18, that the intuitive estimate for accommodation, which was made without taking the N.T.I.A. into account, is somewhat lower than the regression estimate. This may tend to confirm that 9% for the services sector is a little under-stated.

Were the increase in air traffic to warrant the build-up of the N.T.I.A. along the lines initially forecast, then the demand for hotel rooms generated by the airport might

22 Internal Forecast, T.A.A.P., M.O.T., Toronto, 1975.

23 Ibid.

be as follows:

1981	1200 rooms
1986	2000 rooms
1991	3300 rooms ²⁴

Using Malton as a guide, 3300 rooms would represent 12 hotels. About 60% of the occupancy rate would be by air travellers including crews.²⁵

Assuming that about 500 rooms of this total demand would be provided in the air terminal building, for the convenience of passengers and flight crews, a potential demand for 2800 hotel rooms is open for capture. Applying the rate of .6 persons per hotel room plus restaurant and convention facilities this would create employment for 1,680 persons, which translates into a service component figure of 2.24%.

The accommodation component for Mississauga is 1.1. For Etobicoke it is .1 and for Brampton it is 1.2. No one urban place has captured all the hotel and related activity generated by Malton. Because of the data base used in assessing North Pickering's prospects, it cannot be determined exactly by how much the service sector should be increased, even if it is assumed that the New Community can capture virtually the whole of the accommodation demand generated by an expanded N.T.I.A. For working purposes a figure of 2.0% is being used.

24 Ibid.

25 Ibid.

Industrial Land Requirements

For purposes of assessing industrial land requirements, manufacturing, wholesale and construction employment can be added together to produce a total of 21,750 jobs required in secondary industry. Using 15 workers per net industrial acre requires the provision of approximately 1,450 industrial acres. Of this, a little more than 1,000 acres could be conveniently provided within the New Community.

The remaining 400-450 acres could be provided within the boundaries of the New Community with some infringement of its environmental objectives.²⁶

Since the airport exists, there also exists the possibility of locating some industrial land requirements on the airport site.

To the extent that the presence of the airport tends to generate more service employment, then the New Community may reach its employment objectives with fewer industrial jobs.

Were the airport to expand, then by 1986 there might be as many as 15,000 airport employees and by 1991, this number could increase to 20,000.²⁷ If the New Community chose to regard airport employment as part of its employment opportunities, then clearly many fewer jobs would be required within the New Community itself.

However, due to the special characteristics of airport employment which includes a high proportion of air crews

26 Evaluation of Phase III Modified Concept Plans, North Pickering Project, 1975

27 Internal Forecast, TAAP, MOT, Toronto, 1975.

and since some other airport employees will work out of both airports, about 33% is the highest realistic figure that can be postulated for airport employees who might choose to live in the New Community.²⁸ This in turn could affect the "live/work" goal for the New Community.

The other alternative is for North Pickering to reduce its employment objectives. About 15,000 industrial workers is the maximum number likely to be accommodated on 1,000 industrial acres. This in turn would reduce the secondary employment component (manufacturing, wholesale and construction) to 20 points and the total activity rate to 34%. In these circumstances, it would not be possible to balance the number of jobs available with the estimated size of the resident labour force. Increased commuting would result and the goal of a live/work community would become virtually unattainable.

The Goal of a Live/Work Community

The goal of building a New Community in which residents may conveniently choose to both live and work was chosen for three main reasons: It obviates the need for long journeys to work and so offers people more free time and greater personal convenience; it moderates the increase in commuting pressures which might otherwise occur in the region and it offers the possibility of living in a "proper town", rather than in a suburban, residential setting.

28 This figure was extrapolated from employee distribution and travel time factor relationships observed at Malton as established by Summer 1969 Travel Survey, Toronto Area Airports Project.

The "market" scenario as postulated can provide the "necessary condition" for implementing a live/work community for the first generation of settlers. The total number of jobs provided by the "market" scenario is quite adequate for this purpose. At the same time, the North Pickering Project is developing a housing policy designed to provide housing commensurate with the needs of the people who are likely to work in the New Community. The financial implications of simultaneously providing commensurate jobs and housing is also being examined.

Since social and recreation facilities must be provided for a community of approximately 75,000 people the provision of these services too is being tailored to meet the needs of people likely to be interested in both living and working in the New Community.

When a company expresses a firm interest in locating in North Pickering, it would be desirable to work with the employer and with the employees to ascertain how many have an interest in also living in the New Community and what the housing preferences in terms of size, type, price, etc., of such interested persons are. This would facilitate the simultaneous location in North Pickering of an interested firm and those of its employees who are interested in also living there.

It is clear that the idiosyncratic preferences of every individual could not be met, but it also seems clear that a careful implementation strategy could provide the "sufficient conditions" for a live/work community and so put in place an urban community which meets the wishes of the majority of people with an interest in living and working there and, at the same time, acquaint the potential population with the fact that their preferences are being sought and will be implemented if feasible. Unless travelling long distances to and from work is a deliberate choice on the part of most people, this may offer a realistic approach to building a New Community in which many people can conveniently choose to both live and work.²⁹

²⁹ For detailed implementation proposals, see "Strategic Proposals for Implementing a "Live/Work" Community at North Pickering, North Pickering Project, 1975.

TECHNICAL APPENDIX

THE SERVICES SECTOR

The Service Sector

The purpose of this technical appendix is to explore further some of the characteristics of the service sector in the Central Ontario urbanized lakeshore, and to dimension the nature of North Pickering's probable service sector to a level commensurate with the detail available for the manufacturing sector.

For most of the planning process, only highly aggregated service sector data was available. Toward the conclusion of the study, Statistics Canada made available detailed place of work employment data for the lakeshore area. This substantial improvement in the economic planning data base was immediately harnessed for this and other analyses.

Approach

The approach adopted here is two-fold:

1. An intuitive analysis of the service employment patterns in the Central Ontario lakeshore and the application of previous studies, on North Pickering's market prospects, to suggest the New Community's service sector structure in 1986/91.
2. A statistical analysis of the lakeshore service sector structure and the estimation of prospects for North Pickering under a range of urban activity rates.

Preliminary Estimates

The approach adopted in the first part of this exercise was to examine the distribution of employment rates (employment/population) for various services in places along the lakeshore. Having established the range of rates, arithmetic means and modes were estimated. Following this the extremes of the range of values for each activity were progressively deleted to reduce the effect of atypical places, e.g. Metro Toronto in finance, Milton in health and welfare. From these reduced distributions service employment possibilities are suggested for North Pickering.

Data

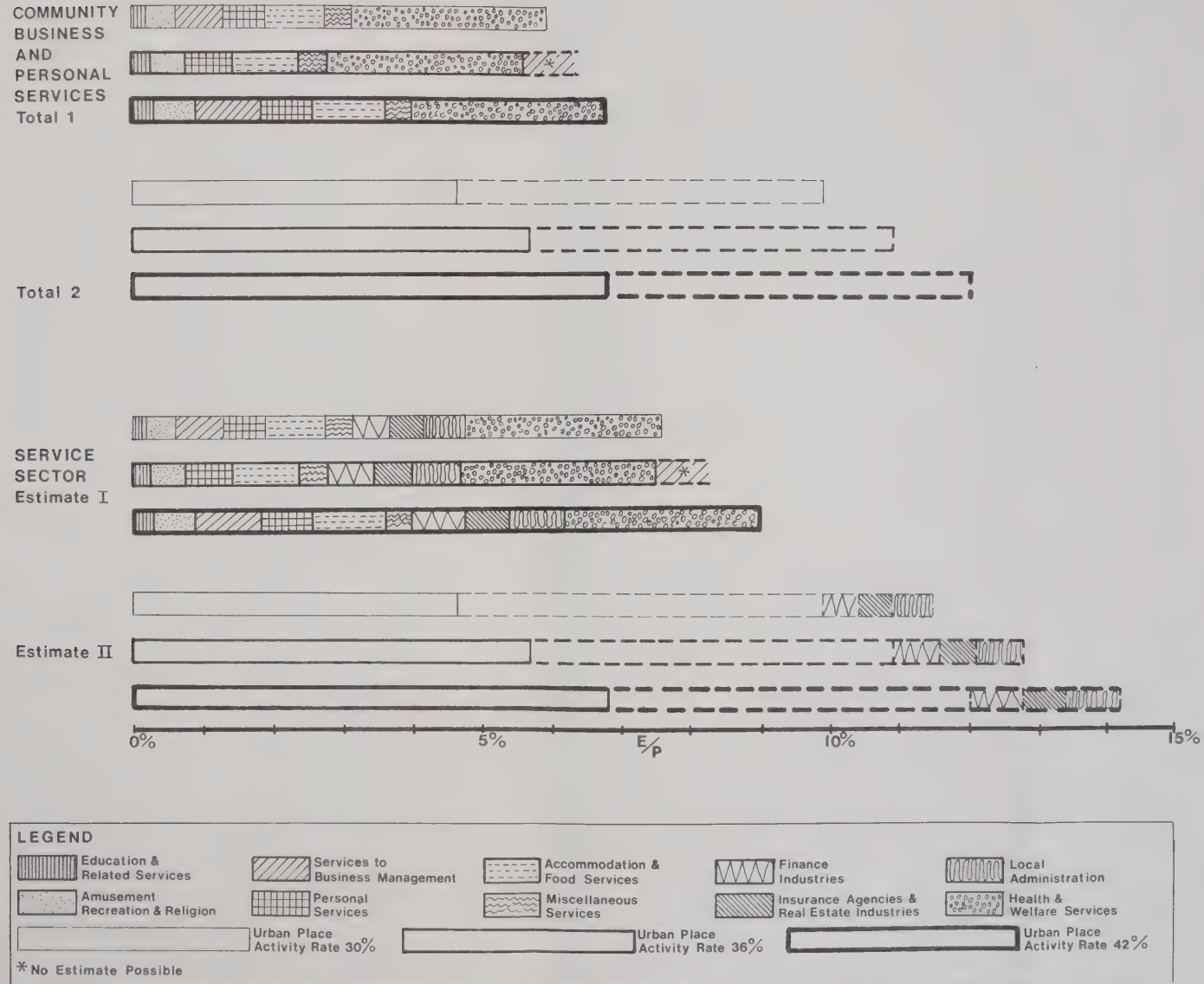
Table 1 presents the base data. The data were provided by Statistics Canada for the Census year 1971 at a 3-digit SIC* level. Wholesale and retail employment data have been included for comparison. The urban places (30) included are those in the Central Ontario lakeshore area, representative of the urban economic environment within which North Pickering will develop. To start, sixteen places were chosen as suitable analogies to suggest the (range) possibilities for North Pickering.

These were:

Burlington	Etobicoke (Borough)
Oakville	Scarborough "
Oshawa	York "
Brampton	East York "
Bramalea (Chinguacousy Twp.)	North York "

* S.I.C. - Standard Industrial Classification

FIG. 13 THE SERVICE SECTOR – REGRESSION ESTIMATES



Whitby

Pickering Twp.

Richmond Hill

Vaughan Town

Mississauga

Markham Town

In the estimation procedure reference is sometimes made to the entire lakeshore's urban places.

Employment Rates

The employment rate ranges were computed for the entire data series and for two deletions at both ends of the distribution. (Table 2).

TABLE 2 TOTAL RANGES AND TWO DELETIONS FOR TRADE AND SERVICE EMPLOYMENT RATES (1971)

	<u>Total Range</u>	<u>1st Deletion</u>	<u>2nd Deletion</u>
	%	%	%
<u>S.I.C. Division 8</u>			
Major Group 1 -			
Wholesale Trade	0.3 - 6.2	0.6 - 5.6	0.7 - 3.5
Major Group 2 -			
Retail Trade	0.7 - 10.3	1.4 - 6.1	1.5 - 6.0
<u>S.I.C. Division 9</u>			
Major Group 1 -			
Finance Industries	0.1 - 1.6	0.2 - 1.3	0.3 - 0.6
Major Group 3 -			
Insurance Agencies and Real Estate Industries	0.1 - 1.6	0.2 - 1.2	0.3 - 0.7

Table 2 Cont'd

	<u>TOTAL RANGE</u> %	<u>1ST Deletion</u> %	<u>2nd Deletion</u> %
<u>S.I.C. Division 10</u>			
Major Group 1 - Education and Related Services	0.9 - 10.7	1.0 - 6.3	1.6 - 5.3
Major Group 2 - Health and Welfare Services	0.3 - 6.7	0.4 - 6.1	0.8 - 4.9
Major Groups 3 & 4 Amusement, Recreation and Religion	0.1 - 1.9	0.2 - 1.6	0.3 - 1.2
Major Group 5 - Services to Business Management	0.1 - 2.4	0.4 - 1.4	0.5 - 1.2
Major Group 6 - Personal Services	0.1 - 1.5	0.2 - 1.0	0.4 - 0.9
Major Group 7 - Accommodation & Food Services	0.2 - 2.3	0.3 - 1.9	0.5 - 1.4
Major Group 8 - Miscellaneous Services	.06 - 1.1	0.2 - 0.9	0.3 - 0.7
 Total Division 10	 2.4 - 17.5	 3.2 - 12.4	 3.9 - 11.9
<u>S.I.C. Division 11</u>			
Major Group 3 - Local Administration	0.2 - 1.8	0.3 - 1.4	0.4 - 1.1

Trade - Wholesale

It is evident that the distribution of wholesale employment rates is quite extensive. After two deletions the range remains a multiple of 5 of the lowest value (0.7%). The average tends to lie around 1.5%. The range is extended by Vaughan's (6.2%) rail classification operation and Port Credit's (5.6%) oil refining activities. Bramalea* had a rate of 1.9%, Brampton 2.0%, and Scarborough 1.6%. North Pickering's potential of using good road and rail facilities and the availability of space suggests that a rate of around 2.0% is probable.

Trade - Retail

The range of retail employment rates is a little less extreme. Places like Brampton (6.1%) and Port Credit (10.3%) had relatively high levels of retail employment. Very different places like East York (1.4%), Bramalea (1.5%) and Pickering Township (0.7%) had low levels. The average tends to be around 4.8 %. North Pickering's prospects are uncertain given the relatively high rate in Scarborough (4.1%) and Ajax (5.8%). A rate like North York (3.8%) or Richmond Hill (3.3%) might represent the upper level for North Pickering. A *working* rate of 3.5% is suggested.

Services - Finance

After truncating the distribution of financial service employment rates over thirty places they exhibit a moderate range. The upper rate is four times the lower. There is little to

* Chinguacousy Township data is used to estimate Bramalea.

indicate a likely rate for North Pickering. It may be expected that more convenience and local business financial services would be provided than in East York (0.2%). There is little to suggest that the rate should be far above Scarborough's (0.4%). However, Ajax (0.7%) and Richmond Hill (0.5%) as peripheral urban places have higher rates. An average rate of 0.5% is suggested for North Pickering.

Services - Insurance and Real Estate

The range of employment rates in insurance and real estate is extensive, from 0.1% to 1.6%. The modal value lies around 0.4%. High growth areas such as Bramalea, Mississauga and Scarborough did not display significantly higher rates in 1971. The Pickering area however had a relatively high rate of 1.2%. The highest rates are found in Port Credit (1.6%) and the City of Toronto (1.3%). The Metropolitan Boroughs all have modest rates below 0.4%. Insurance agencies can be expected in North Pickering as a matter of course. Whether large companies will relocate or establish substantial offices is less certain. Likewise, in the real estate sector the possibilities depend upon how the Development Corporation undertakes the land disposition process. This is as much a matter of policy as it is one of development economics. For the present exercise it is assumed that the Development Corporation does most of the marketing. A relatively low employment rate for insurance and real estate services of 0.3% is suggested.

Services - Education and Related

The range of education employment rates is large, from Pickering Township's 0.9% to Pickering Village's 10.7%. Deleting these extremes reduces the ranges to 1.0% - 6.3%. The upper range is influenced by Milton's large educational employment in the Ontario School for the Deaf located there. A second reduction of extreme values gives a range of 1.6% - 5.3%. Toronto City and Hamilton have relatively high values of 4.2% and 3.4% respectively reflecting their university, research and related functions. The inner Boroughs of York and East York have low rates of 1.0% and 0.9% respectively. The three outer Boroughs have rates between 1.9% and 2.5%. Some places beyond the immediate metropolitan area tend to have higher rates, e.g. Ajax (2.6%), Brampton (2.2%), Streetsville (2.3%), Aurora (4.2%), Markham (2.4%), Richmond Hill (2.3%) and Whitby (2.2%). There is little to suggest that North Pickering would be very much different from these places. Notwithstanding the recent decrease in the rate of school enrollments the possible demographic structure of the North Pickering community (high family content) could counteract this general tendency. A rate of 2.4% is suggested as a first estimate.

Services - Health and Welfare

The range of employment rates for health and welfare services is very large (0.3% - 6.7%). The average tends to lie around 2.8%. There are a number of atypical places which keep this range wide, e.g. Milton (6.1%), Whitby (4.7%) and Newmarket

(6.7%). These places have general and psychiatric hospitals and welfare institutions. It is unlikely that North Pickering will have a rate close to these levels unless a major medical institution is present. It is equally unlikely that the low rates typical of the Metropolitan Boroughs (1.1% - 1.6%) will be evident. These low rates may be the result of staffing economies relating to scale of operation and size of serviced population. The average rate of 2.8% is suggested for working purposes.

Services - Amusement, Recreation and Religion

The range of employment rates is also large in this sector. It is less easy to explain individual variation. Three deletions at the lower end of the distribution make little difference to the range. The extreme values are concentrated in a relatively small number of high value places, e.g. Vaughan Town (1.9%) and Pickering Village (1.6%). Without justification for suggesting any bias toward either end of the distribution the modal value of 0.4% is suggested.

Services to Business Management

It is possible that North Pickering could have some of the smaller business-serving activities presently evident in the Toronto suburbs (0.6% - 1.2%). It could however be as low as Bramalea's 0.4%, or as high as Mississauga's 1.2%. The average of 0.7% seems to lie between the higher metropolitan fringe places (Brampton, Mississauga, North York and Vaughan Town) and the scatter of other rates. Because of the likely predominance of manufacturing acti-

vities and the proximity of North Pickering to Toronto, it is suggested that up to the design population of 70-90,000 the rate will be relatively low at about 0.5%.

Services - Personal

The personal services employment rate is difficult to anticipate. Urban places with populations similar in size to North Pickering's design level (Burlington, Oakville and Oshawa) have rates scarcely different from some smaller circum-metropolitan places (Brampton, Richmond Hill, Markham Town and Aurora). Mississauga (0.4%) and Bramalea (0.2%) appear to be relatively deficient in these services.* There is little to suggest that North Pickering might be deficient in most personal services, especially convenience services. It is expected that a rate similar to the outer Boroughs and the overall average may be attained, i.e. 0.7%.

Services - Accommodation and Food

The range of employment rates is not too extensive in this sector. Like health and welfare services and retail trade this is a relatively labour-intensive sector. The outer suburbs range between 0.8% and 1.0%. Small circum-metropolitan places have relatively low rates e.g. Richmond Hill (0.8%), Markham Town (0.5%). Relatively high rates are evident in the west of Metropolitan Toronto, e.g. Mississauga (1.1%), Port

* Or are availing of considerable staffing economies associated with modern shopping centre developments.

Credit (1.9%) and Brampton (1.2%). The Etobicoke (1.0%) and Mississauga rates reflect the presence of airport-related accommodation and entertainment facilities. A rate slightly below the average is suggested for North Pickering i.e. around 0.9%.

Services - Miscellaneous

The distribution of miscellaneous service employment rates is extensive. The average is around 0.5% with modal values between 0.3% and 0.5%. A middle value of 0.4% is used for convenience, reflecting the moderate level of total service employment expected in North Pickering, under normal market conditions.

Local Administration

Employment rates in this sector in the Durham Region are higher than many other areas. There is no immediate pattern relating the rate to size of municipality, time since restructuring, proximity to Metro and other factors. The management and building of the New Community will be the responsibility of the Development Corporation. Like the construction sector the numbers employed may vary over time depending upon the rate and type of development. For present purposes, it is assumed that the Development Corporation will employ personnel to a level analogous with places of similar size (i.e. 70-90,000) and location. The employment rate might approximate that of the larger surrounding areas and the overall average. A rate of 0.8% is suggested.

These first estimates of retail, wholesale and various

service employment rates for North Pickering (with 70-90,000 population) are presented below.

TABLE 3 NORTH PICKERING - FIRST ESTIMATES OF POSSIBLE
SECTORAL EMPLOYMENT RATES

<u>S.I.C. Division 8</u>	Employment/population %
Major Group 1 - Wholesale Trade	2.0
Major Group 2 - Retail Trade	3.5
TRADE	5.5

<u>S.I.C. Division 9</u>	
Major Group 1 - Finance Industries	0.5
Major Group 3 - Insurance Agencies and Real Estate Industries	0.3
FINANCE, INSURANCE AND REAL ESTATE	0.8

<u>S.I.C. Division 10</u>	
Major Group 1 - Education and Related Services	2.4
Major Group 2 - Health and Welfare Services	2.8
Major Groups 3 & 4 - Amusement, Recreation and Religion	0.4
Major Group 5 - Services to Business Management	0.5
Major Group 6 - Personal Services	0.7
Major Group 7 - Accommodation and Food Services	0.9
Major Group 8 - Miscellaneous Services	0.4
COMMUNITY, BUSINESS AND PERSONAL SERVICES	8.9

<u>S.I.C. Division 11</u>	(E/P) %
Major Group 3 - Local Administration	0.8
TOTAL (Div. 9, 10 and 11, MG.-3)	9.7

These are first estimates drawn from a diverse range of urban places of different sizes, urban economic bases and locations with reference to Metropolitan Toronto. Experience in the United States and Canada has clearly demonstrated the changing proportions of the various employment sectors over the city-size spectrum.* The review of urban economic regularities in the Central Ontario urban system has also indicated the changing proportions of total employment in the various sectors, especially manufacturing and services, throughout the range of city sizes.** In addition to the changing sectoral make-up of cities of different sizes and locations, there are significant differences in the absolute level of employment as a proportion of resident population. That is, the urban place activity rate itself varies over the city-size spectrum. As the wholesale, retail and service employment rates which have just been estimated, are by definition expressed as a proportion of total population, as the activity rate itself changes (employment/population) so will the individual sectoral employment rates change.

In the urban systems analysis completed by the North Pickering Project activity rates and sectoral splits were estimated for a new city in the vicinity of Metropolitan Toronto. These were as follows:

<u>Activity Rate</u>		<u>Proportion of Employment in Services (Es/E)</u>
(E/P)	30 %	25.2% - 26.1%
	36 %	25.2% - 26.1%

* See Urban Systems Analysis: A Literature Review, North Pickering Project, (1974).

** See Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project, (December, 1974).

These are estimates under defined market conditions. The proportions of employment in services were relatively high, unaltered from broader, regional patterns.

Translating these into service employment rates i.e. E_s/P , is achieved by the following steps.

For $E/P = .30$ and $E_s/E = .252$ we have

$$\begin{aligned}
 E_s &= E(0.252) \quad \text{and} \quad P = E \left(\frac{100}{30} \right) \\
 \therefore E_s/P &= \frac{E(0.252)}{E/(100/30)} \\
 &= (0.252)(0.3) \\
 &= .0756
 \end{aligned}$$

For the entire activity rate and service employment rate set, the following E_s/P matrix is derived.

E/P	E_s/P	.252	.261
.30		.0756	.0783
.36		.0907	.097

When the intuitive services employment rate estimate of 0.097, which was independently derived, is compared with these, a number of conclusions can be drawn.*

- (i) For cities in the 70-90,000 population range with different employment levels (activity rates), the services employment rate can be expected to vary from a possible .0756 to .097 or by 2.14 percentage points.

* It is to be noted that the "services sector" used in the urban systems analysis in the North Pickering Project included the SIC Divisions 7, 9, 10 and 11. The first is "Transportation, Communications and Other Utilities". These were included because of data constraints and the high personal and business service component in this Division. This makes the .094 derived from the intuitive inspection of the service components, which does not include Division 7, slightly above the estimates generated from the urban systems analysis.

- (ii) There is general consistency between the more macro-economic estimates derived from the urban systems analysis and the intuitive inspection of the service sector components approach, adopted above. This consistency is in part due to the same assumptions being applied by the same person or persons working on both exercises. However, the analyses were carried out several months apart, using different methodologies and with data bases of contrasting quality and detail.

Refinement - Regression Analyses

Method

Given that service employment rates vary, depending on, among other things, the level of employment available in an urban place, the next step was to examine the pattern of change in the components of the service sector as the urban activity rate itself changed. This would serve to refine the broad sector/activity rate relationships previously established,* provide important insights into what might be expected on an individual service industry basis, e.g. finance, health and welfare and suggest the prospects for North Pickering under various activity rates.**

* See Urban Systems Analysis: Aggregate Analysis of Regional and Lakeshore Corridor Patterns, North Pickering Project (December, 1974).

** Three urban activity rates are critical: i) the low 30% level under conditions of metropolitan dominance; (ii) the 36% level representing less metropolitan dominance and (iii) the 42% "market" level due to special features of a new community in the general metropolitan area. (See Part II of this Report.)

The method adopted was a regression analysis for each service sector for thirty urban places in the Central Ontario urbanized lakeshore. In regression analysis, the relationship between two or more variables is examined by calculating and plotting a line which minimizes the sum of the squares of the differences of the individual observed values, from this line. From this line of "central tendency" estimates of one variable (the dependent) are made from given values of the other, or others (independent variables). The degree to which the estimating line maps out a close relationship between the variables is expressed by the correlation coefficient, confidence limits and significance tests.

The product moment correlation coefficient (r) is calculated by taking the average of the products of the deviations of each data set from their respective means and dividing by the product of their standard deviations. The coefficient thus expresses the co-variation of the data sets as a proportion of the product of their standard deviations.

For the trade and service sectors employment rates E_i/P (where $i = 1, 2 \dots 13$) and the urban place activity rates e_j (where $j = 1, 2 \dots 30$ and $e = E/P$), the correlation coefficient is expressed as:

$$r = \frac{\frac{1}{n} \sum (E_i/P - \bar{E}_i/P) (e_j - \bar{e}_j)}{\sigma_{E/P} \cdot \sigma_e} \quad (i)$$

Where \bar{E}_i/P and \bar{e}_j represent the mean trade or service employment rates for sector i and the mean activity rates for all urban places (j), respectively.

$\sigma_{E/P}$ and σ_e represent the standard deviation of the distributions of the trade and service sector employment rates and the standard deviation of the distribution of urban place activity rates in the lakeshore.

The correlation coefficient can range between -1.0 and 1.0. If it is -1.0 or close to it the relationship between the dependent variable, to be estimated, and the independent is an inverse one. If it is 1.0 or close to unity (i.e. 0.5 - 1.0) the relationship is positive. With $r = 0$ or between -0.5 and 0.5 there is either no statistical relationship present or a weak association. Most correlation analyses assume linear relationships or employ transformations to approximate them. The linear relationship postulated between various trade and service sector employment rates and urban places activity rates is expressed as follows.

$$E_i/P = \alpha + \beta e_j + z \quad (ii)$$

Where $i = 1, 2, \dots, 13$

$j = 1, 2, \dots, 30$

E_i/P equals the employment in activity i /population, e_j represents the urban place activity rate, total employment/population, α is the intercept on the y axis, β is the slope of the regression line and z is an error term.

In plotting the regression equation (line) the scatter of the dependent variable's (E_i/P) values off the estimating line are called residuals. The regression equation maps a line which minimizes the sum of squares of these residuals. This is

done by the computation of the slope (β) which indicates how one variable changes with a change in the other. The slope or regression coefficient equals $r (\sigma_{E_i/P} / \sigma_{e_j})$.

Confidence limits measure the scatter of observations about the estimating line and illustrate the degree to which the estimating equation (line) accurately predicts one value (the dependent) on the basis of the other (independent). They measure the deviation of observed as against expected or estimated. Because regression analysis is usually applied to sample data in order to infer characteristics of the universe or statistical population, the deviations of actual values from the estimated are referred to as standard errors of the estimate. This is estimated as follows:

$$S_{E_i/P} = \sigma_{E_i/P} \sqrt{1 - r^2} \quad (\text{iii})$$

In a statistically normal distribution one standard deviation around the mean will encompass 68.3% of all occurrences. Two standard deviations will encompass 95.45% of all outcomes. These characteristics of a normal distribution are applied as assumptions to the distributions of the dependent and independent variables. As the regression exercise is designed to minimize the uncertainty of estimating the dependent from the independent variable, the magnitude of the standard error will indicate the degree to which the estimating line can really summarize the scatter of observations. A good rule of thumb is that the standard error of the estimate should be less than 10% of the range of the dependent variable.

Could the correlation coefficient have occurred by chance given the size of sample used? A test statistic known as "Student's t" is used to determine the significance of the correlation coefficient.

$$t = \frac{r \sqrt{N - 2}}{\sqrt{1 - r^2}} \quad (\text{iv})$$

Where N is the number of pairs of data in the analysis and (N - 2) are the so-called "degrees of freedom" for the test.

Besides testing for the significance of the overall relationship as expressed by the correlation coefficient, the regression equation itself has to be validated as a significant explanant of variation. This is done by a variance ratio test known as Snedecor's F-test. The issue is whether the regression is only a useful predictor of the mean value of the dependent variable i.e. \bar{E}_i/P . If it does no more, then the slope of the line would be zero i.e. $\beta = 0$, giving a constant mean employment rate for the full range of activity rates. This would be a minimum of explanation. A useful regression analysis will usually have a slope where $\beta > \text{or} < 0$.

The F-test is calculated as follows:

$$F = \frac{\sum (\hat{E}_i/P - \bar{E}_i/P)^2 / \text{d.f.}}{\sum (E_i/P - \bar{E}_i/P)^2 / \text{d.f.}} \quad (\text{v})$$

The variance between the predicted value of E_i/P (i.e. \hat{E}_i/P) and the actual mean of E_i/P (i.e. \bar{E}_i/P) is compared to the actual variance in the observed data itself i.e. $\sum (E_i/P - \bar{E}_i/P)^2 / \text{d.f.}$

The degrees of freedom (d.f.) are computed as

$$\text{d.f.} = (N - 1) - \rho \quad (\text{vi})$$

Where N equals the number of paired observations, (N-1) is a reduction because of the mean and ρ is the number of parameters to be estimated. In the present context the model only estimates one parameter β , the rate of change (slope) of the dependent variable due to a change in the independent variable. There are therefore 28 degrees of freedom.

If the residuals of the observed data are reasonably close to the estimating regression line the following relationship is required:

$$\Sigma (E_i/P - \bar{E}_i/P)^2 = \Sigma (\hat{E}_i/P - \bar{E}_i/P)^2 + \Sigma (E_i/P - \hat{E}_i/P)^2$$

Where $(E_i/P - \hat{E}_i/P)^2$ approximates zero.

In order to test the regression equation a null hypothesis is set up which postulates that the regression explains no more than the mean i.e., $\Sigma (\hat{E}_i/P - \bar{E}_i/P)^2 = 0$ or $\beta = 0$.

The square of the correlation coefficient is referred to as the coefficient of determination (r^2). This is the ratio of the variation explained to the total variation.

$$r^2 = \frac{V_2}{V} \quad (\text{vii})$$

Note that r^2 and therefore r approaches 1.0 as V_2 approaches V.

AnalysisTrade - Wholesale

The relationship between wholesale trade employment rates and urban place activity rates for thirty places in the Central Ontario lakeshore is plotted in Figure 1. The relationship is not a strong one with a correlation coefficient (r) of 0.32 and a large standard error of 1.315%. The high level of variability in the E_i/P values left unexplained by the regression equation is emphasized in the coefficient of determination r^2 , which indicates that the equation only accounts for 9.948% of total variation. The F-statistic (3.0934) testing the predicted versus the observed variation of wholesale employment rates is not significant, either at the 1% or 5% levels. The equation for the regression is $E_i/P = 0.959 + 2.089 (E/P)$.

Within the constraints of the statistical method and the simple bivariate model no significant relationship can be extracted to relate possible levels of wholesale employment in North Pickering to the overall activity rate or total employment. Reading off the regression line itself indicates the following rates:

Urban Place Activity Rate (E/P)	30	36	42	
Wholesale Employment Rate (E_i/P)	1.6	1.75	1.85	0/0

However, the standard error of the estimate and the variance tests indicate that the predicted values could be several times these values.

$E_i/P\%$

10

WHOLESALE

Fig.1

$$E_i/P = 0.95854 + 2.0892 (E/P)$$

$$r = 0.32$$

$$S_{E_i}/P = 1.3153$$

$$t = 1.7588$$

$$F = 3.0934$$

8

7

6

5

4

3

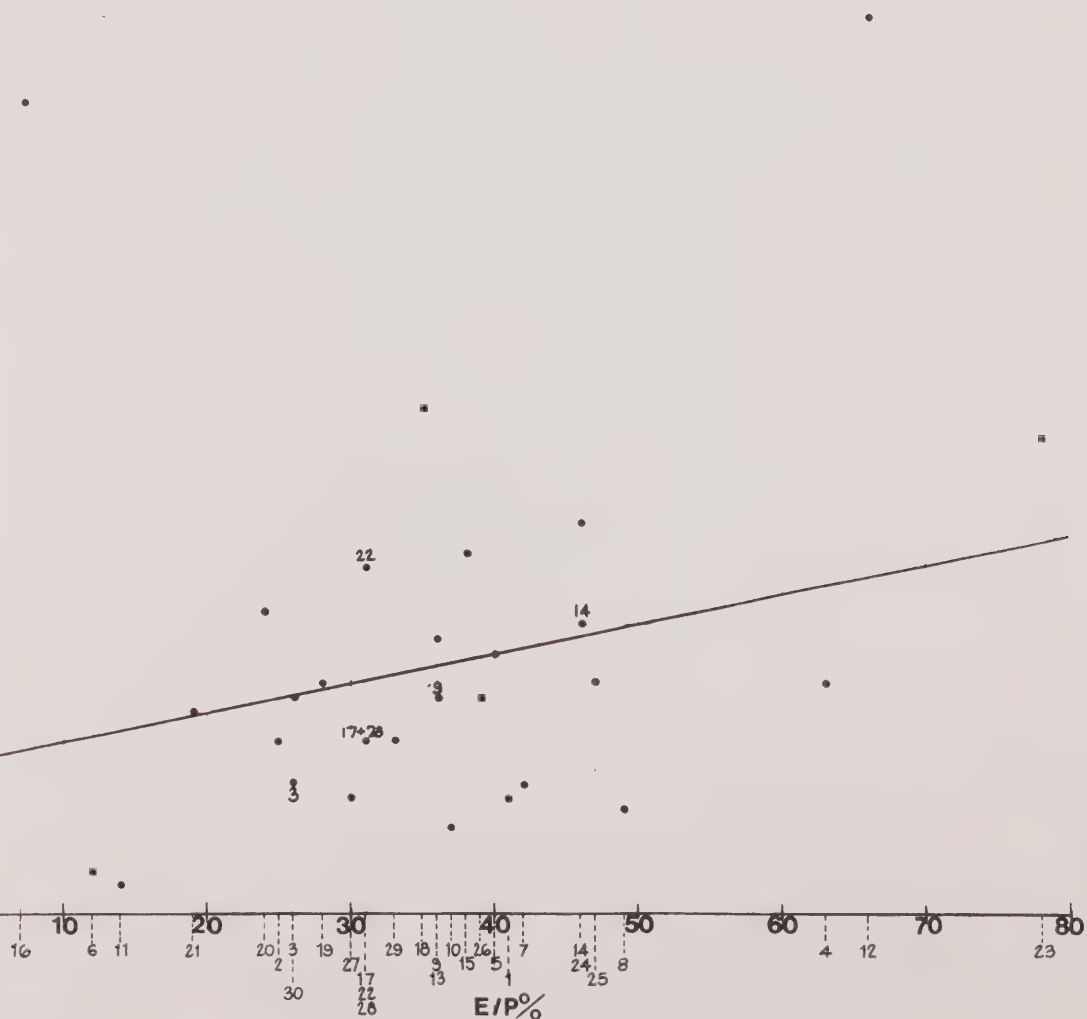
2

1

0

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)



Trade - Retail

Visually the retail employment rate and urban place activity rate relationship looks more regular (Figure 2). A fairly high correlation coefficient of 0.67 is evident. The t-test indicates that this is a highly significant coefficient with a less than 1% chance occurrence. About 45% of the variation in retail employment rates is explained. The F-test does support the linear relationship.

The regression line appears to be a reasonable estimate in the middle activity rate range 25% - 45%. It is expected that with the omission of extreme values (Port Credit - 10.3% Toronto - 8.5% and Pickering Township - 0.7%) the confidence level in predicting variation would be higher.

The regression equation is:

$$E_1/P = 1.904 + (6.15021) E/P$$

$$S_{E_1/P} = 1.432\%$$

For the two activity rate possibilities of 30% and 36% the retail employment rates are estimated at 3.75% and 4.12% respectively. At the 42% activity rate level the retail employment rate could be 4.5%.

Services - Finance

Outside of four extreme values the plot for financial services employment rates is quite regular (Figure 3). The coefficient of correlation is significant at 0.52 and the standard error of the estimate is 0.62%. The regression equation performs poorly in representing the variation of the dependent variable,

$E_i/P\%$

10

RETAIL

Fig. 2

$$E_1/P = 1.90422 + 6.15021 (E/P)$$

$$r = 0.668$$

$$S_{E_1}/P = 1.4319$$

$$t = 4.7557$$

$$F = 22.6173$$

8

7

6

5

4

3

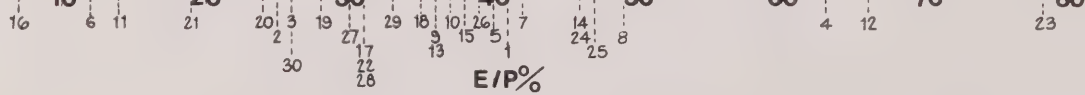
2

1

0

CENTRAL ONTARIO LAKE SHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)



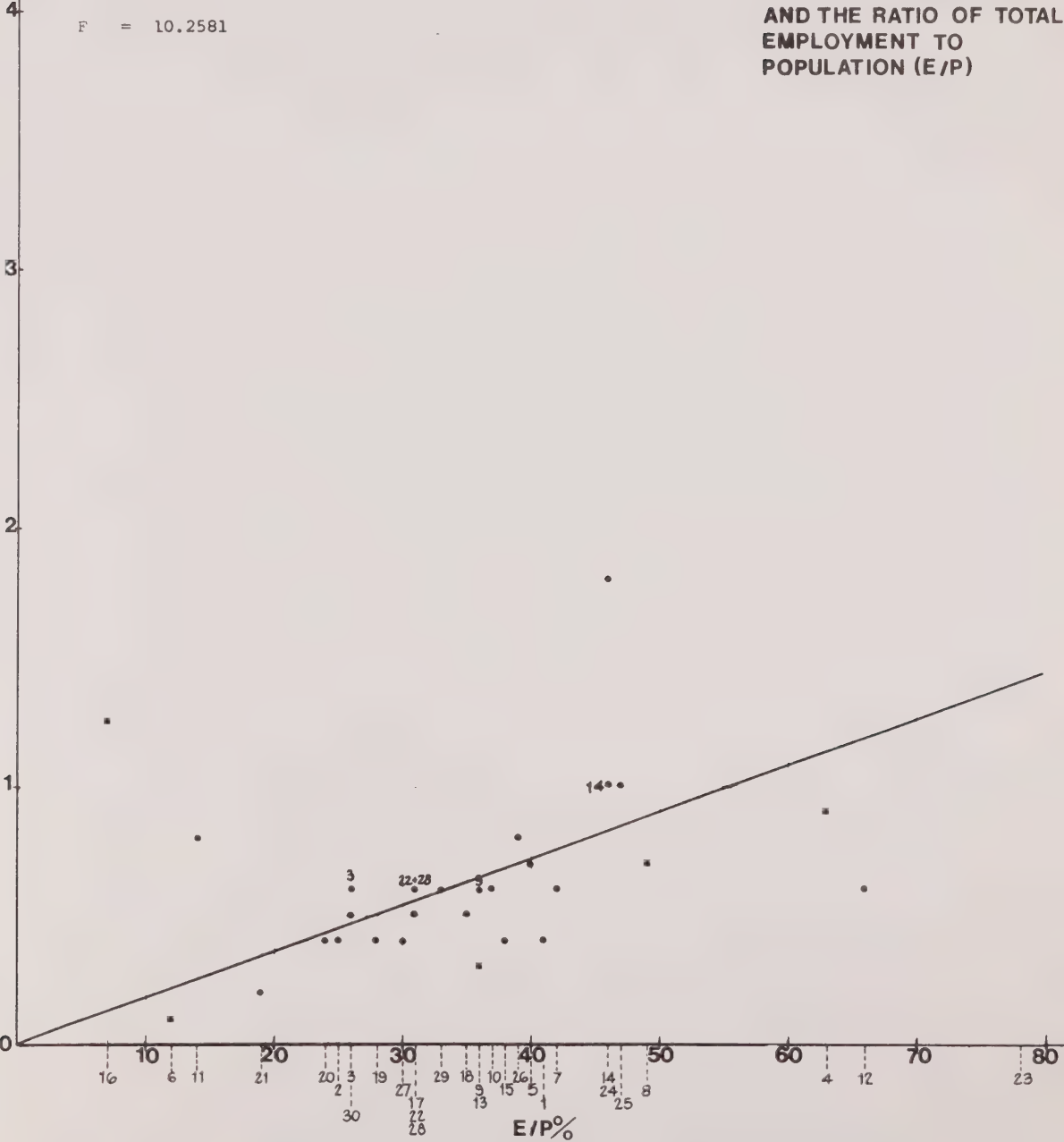
E_i/P%

FINANCE
Fig.3

$E_i/P = 0.00084 + 1.7937 (E/P)$
 $r = 0.519$
 $S_{E_i}/P = 0.6202$
 $t = 3.2028$
 $F = 10.2581$

CENTRAL
ONTARIO
LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)



accounting for only 26.8% of variation. The F-statistic is however, significant at the 1% and 5% levels.

Without taking this any further, it is obvious that the concentration of financial services in Toronto militates against any easy or predictive regularity. However, this exercise was designed to draw out the effects of such things as metropolitan dominance and irregular patterns, as well as the more regular relationships. The plot does display a regular cluster of 18-20 urban places in the 25-45% activity rate range with financial employment rates in the order of 0.3% to 0.7%. It is reasonable to assume that North Pickering with activity rate possibilities of 30%, 36% and 42% would have financial employment rates within this range. Estimating from the regression equation, the following financial services employment rates are possible.

$$E_i/P = 0.00084 + 1.79375 (E/P)$$

Urban Place Activity Rate (E/P)	30	36	42	0/ 0
Finance Employment Rate (E _i /P)	5.39	6.47	7.54	

Services - Insurance and Real Estate

The general relationship between employment in insurance and real estate services and the urban place activity rate is high with a correlation coefficient of 0.74 and a t-statistic of 5.814 (Figure 4). The standard error is low at 0.243%. Approximately 55% of the variation in E_i/P is

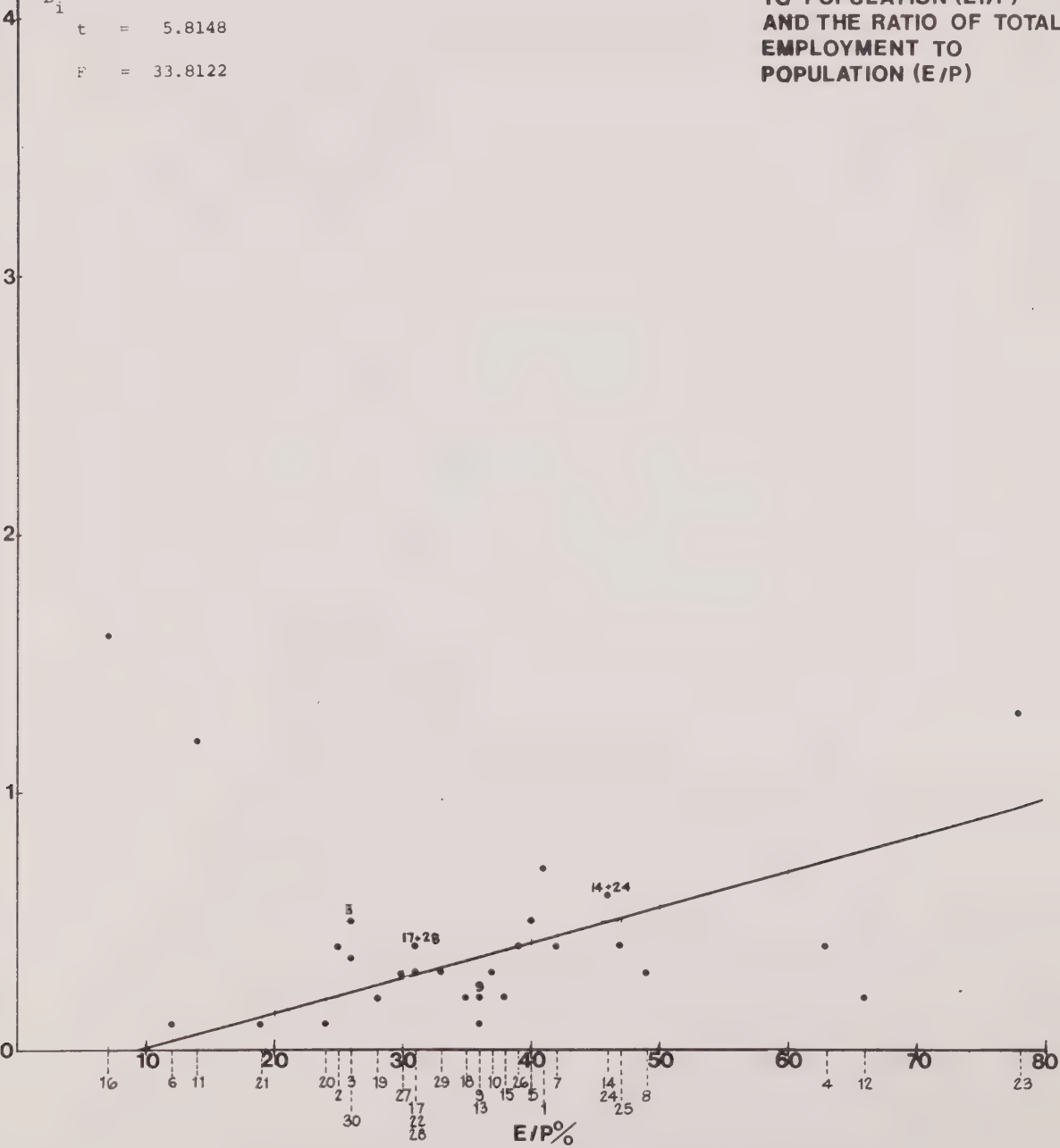
E_i/P%

INSURANCE
& REAL ESTATE
Fig. 4

$E_i/P = -0.09152 + 1.27602 (E/P)$
 $r = 0.739$
 $S_{E_i}/P = 0.2429$
 $t = 5.8148$
 $F = 33.8122$

CENTRAL
ONTARIO
LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)



explained. Once again the simple bivariate relationship will not explain the greater part of variation in insurance and real estate employment rates.

For estimating purposes this regression is adequate. Three employment rate possibilities may be inferred from the regression equation.

Urban Place Activity Rate (E/P)	30	36	42	
Insurance & Real Estate Employment Rate (E_i/P)	.47	.55	.63	⁰ / ₀

With a standard error of 0.243% the 42% activity rate has a very probable employment rate of .387% to .873%.

Services - Education and Related

The pattern of education and related employment rates is one of some extremes, not just at either or both ends of the urban activity rate spectrum, but throughout this range (Figure 5). However, a significant correlation coefficient of .78 ($t = 6.64$) has been computed with over 61% of the variation in employment rates statistically explained. The mean employment rate in 1971 was 3.013%. A standard error of the estimate of 1.246% was computed. With a F-statistic of 44.133 the regression equation can be interpreted as significant in accounting for the observed variation in employment rates.

The scatter about the critical activity rate range (30% - 42%), reduces somewhat, the confidence in useful estimation. The range is not easily explained by the presence of universities or similar institutions.

E_i/P%

10

EDUCATION & RELATED SERVICES Fig. 5

$$E_i/P = -0.09498 + 7.49713 (E/P)$$

$r = 0.782$

$$S_{E_i}/P = 1.246$$

$t = 6.6432$

$F = 44.1326$

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)

8

6

4

2

0

16

10

20

30

40

50

60

70

80

E/P%

6

11

21

31

41

51

61

71

81

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

However, the model provides a good basis for inference. The following employment rates are computed from the equation.

E/P	30	36	42	0/0
E_1/P	2.3	2.8	3.2	

Services - Health and Welfare

There is no evident relationship between employment rates in health and welfare services and urban place activity rates (Figure 6). The extremes alluded to earlier in this appendix (Milton, Whitby, Newmarket, etc.) mask any regularity which might exist. There are undoubtedly fairly regular patient/doctor or patient/hospital type ratios throughout much of the lakeshore. These regularities do not emerge when urban place employment proportions are introduced. The correlation coefficient is moderately significant, but low ($r = 0.31$). Only 9.6% of the variation in employment rates is explained. With $F = 2.97156$ the regression explains little more than the mean value of the dependent variable.

Services - Amusement, Recreation and Religion

Generally the estimation of employment rates in amusement, recreation and religion is successful (Figure 7). A significant ($t = 5.875$) correlation coefficient of 0.74 is computed with a standard error of the estimate of 0.292%. Over 55% of the variation in employment rates is explained by urban place activity rates. As an approximation of the total variation of the independent variable the regression is significant ($F = 34.514$).

$E_i/P\%$

HEALTH & WELFARE

Fig. 6

$$E_i/P = 1.35872 + 2.54778 (E/P)$$

$$r = 0.309$$

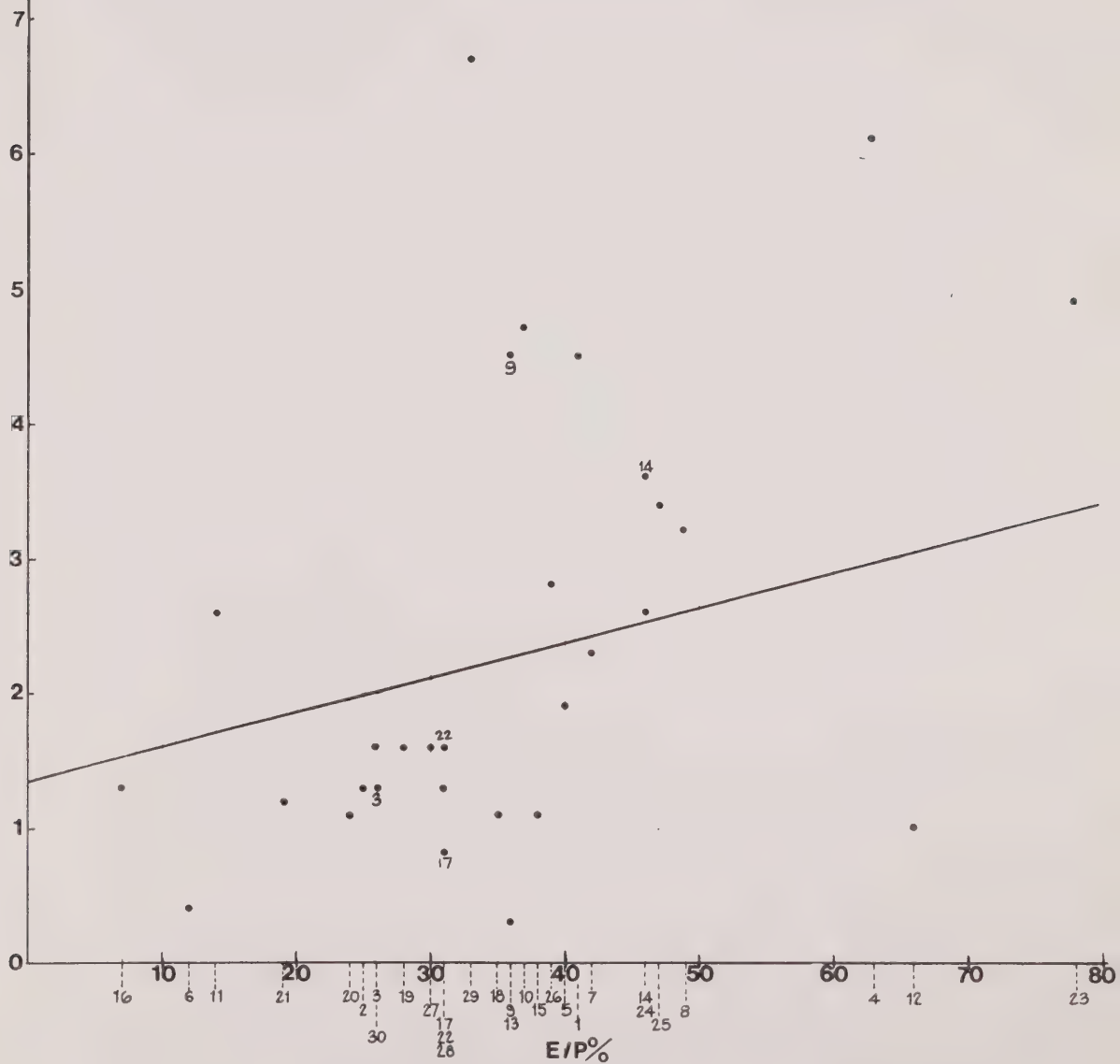
$$S_{E_i}/P = 1.6366$$

$$t = 1.724$$

$$F = 2.9716$$

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP BETWEEN THE RATIO OF SERVICE EMPLOYMENT TO POPULATION (E_i/P) AND THE RATIO OF TOTAL EMPLOYMENT TO POPULATION (E/P)



$E_i/P\%$

5

RELIGION, RECREATION & AMUSEMENT

Fig. 7

$$E_i/P = -0.05367 + 1.54695 (E/P)$$

$$r = 0.743$$

$$S_{E_i}/P = 0.29157$$

$$t = 5.87482$$

$$F = 34.5136$$

4

3

2

1

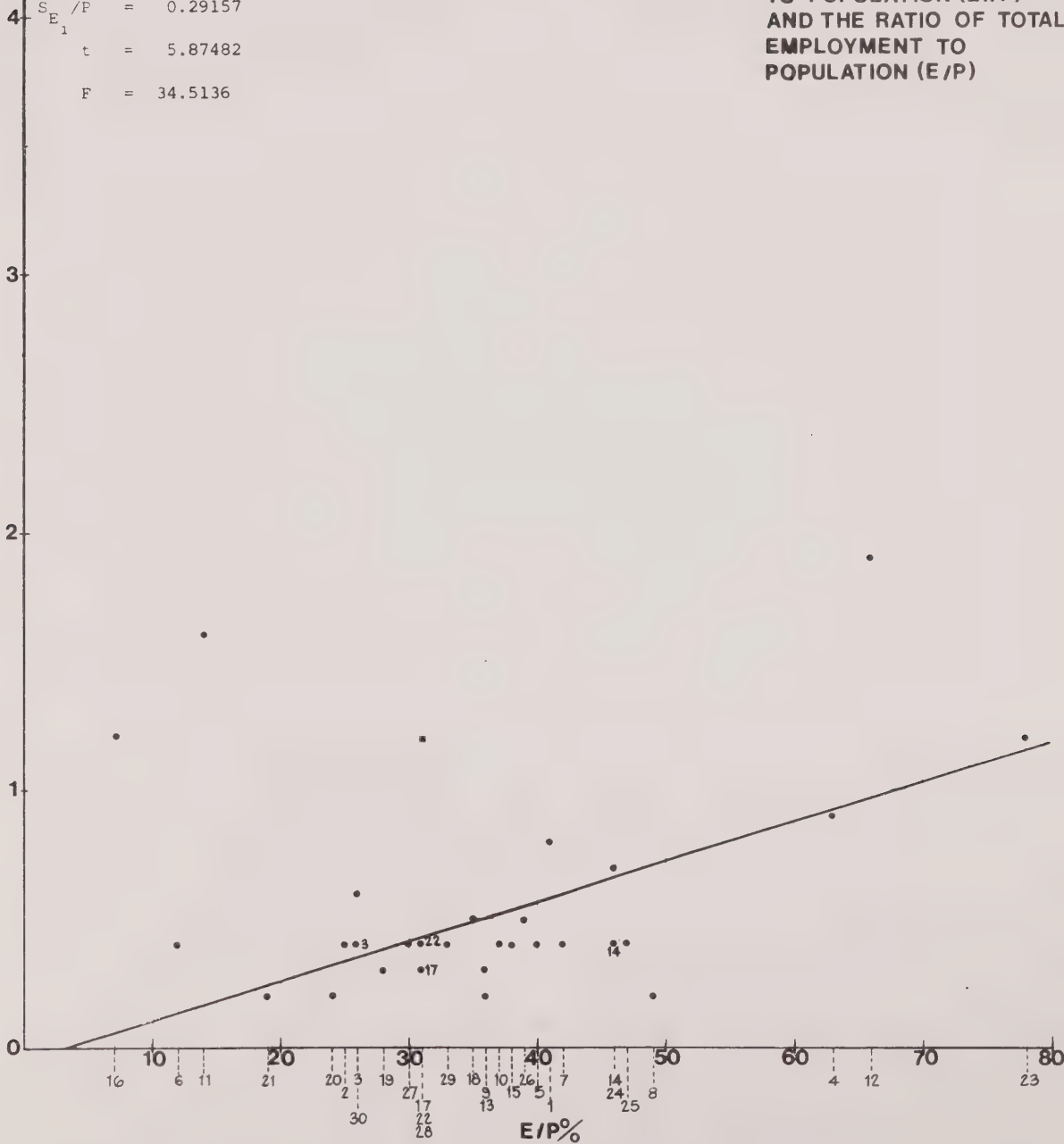
0

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)

16 6 11 21 20 3 19 27 17 22 28 29 18 10 15 26 5 7 14 24 25 8 4 12 23

$E/P\%$



With the reservations regarding the amount of variation left unexplained and the small number (4) of extreme values which reduce a regular relationship, this regression is of some use. Within the relevant activity rate range (30% - 42%) the distribution of observations is clustered, with one extreme. Most observations appear as negative residuals from the line, due to the effects of the four extreme values mentioned earlier. The model provides the following estimates.

E/P	30	36	42	0/0
E_i/P	.41	.50	.59	

Services - Business Management

The regression analysis for employment rates in services to business management gives a significant ($t = 3.85$), if moderate correlation coefficient of 0.59. The standard error of the estimate is considerable at 0.696%. Approximately 34.6% of the variation in employment rates is explained. The regression equation does prove significant in predicting the overall variation in employment rates.

The patterns of the regression equation provides some reliability for inferring rates. The significant clustering of observations about the line in the vicinity of 30%-42% activity rates is once again evident (Figure 8). The extreme variations brought about by metropolitan dominance cannot be confidently estimated by the β coefficient.

Extraction of average estimates in the mid-range, is however, acceptable. This suggests employment rate possibilities between 0.4% and 1.2% for North Pickering. The regression equation provides a range estimate between 0.67% and 0.96%.

5

Fig. 8

$$r = 0.588$$

$$S_{\text{r}} / P = 0.6964$$

$$t = 3.8469$$

$$F = 14.7989$$

THE RELATIONSHIP BETWEEN THE RATIO OF SERVICE EMPLOYMENT TO POPULATION (E_i/P) AND THE RATIO OF TOTAL EMPLOYMENT TO POPULATION (E/P)



16

6

11

21

20

3

9

• • •

3 14

10

26

7

14

4
9
6

4

12

1

23

1

E/P%

Services - Personal Services

Not surprisingly there is a relatively good fit between the personal services employment rate and the urban place activity rate in the lakeshore (Figure 9). A significant correlation coefficient of 0.65 is obtained with a t-value of 4.5089. Over 42% of the variation in E_i/P is explained by the change in E/P . The simple bivariate relationship employed can be posited as an adequate explanant of the variation of personal services employment rates. At the mean employment rate of 0.7367%, rates from 0.4272% to 1.0462% could be expected within 68% (one standard error) of occurrences. The F-statistic is 20.33.

As with a number of the previous distributions the present relationship is marked by a number of extreme values. In distorting the distribution they influence overall relationship in the lakeshore system. In the present assessment of what are much more complex (i.e. multivariate) relationships, they serve to vividly illustrate the real world irregularity of the lakeshore urban economic system.

Places like Toronto City (1.7%) and Milton (1.5%) have very high personal service employment and activity rates. Vaughan Town as a developing fringe of the metropolitan area has a typically low personal service employment rate (0.5%) matched by a high overall employment rate (due largely to the CNR classification yards). Port Credit lies at the opposite extreme with a very high level of personal services employment (2.0%) and a low urban activity rate (7%).

$E_i/P\%$

5

PERSONAL SERVICES

Fig.9

$$E_i/P = 0.215 + 1.26028 (E/P)$$

$$r = 0.648$$

$$S_{E_i}/P = 0.3095$$

$$t = 4.5089$$

$$F = 20.33$$

4

3

2

1

0

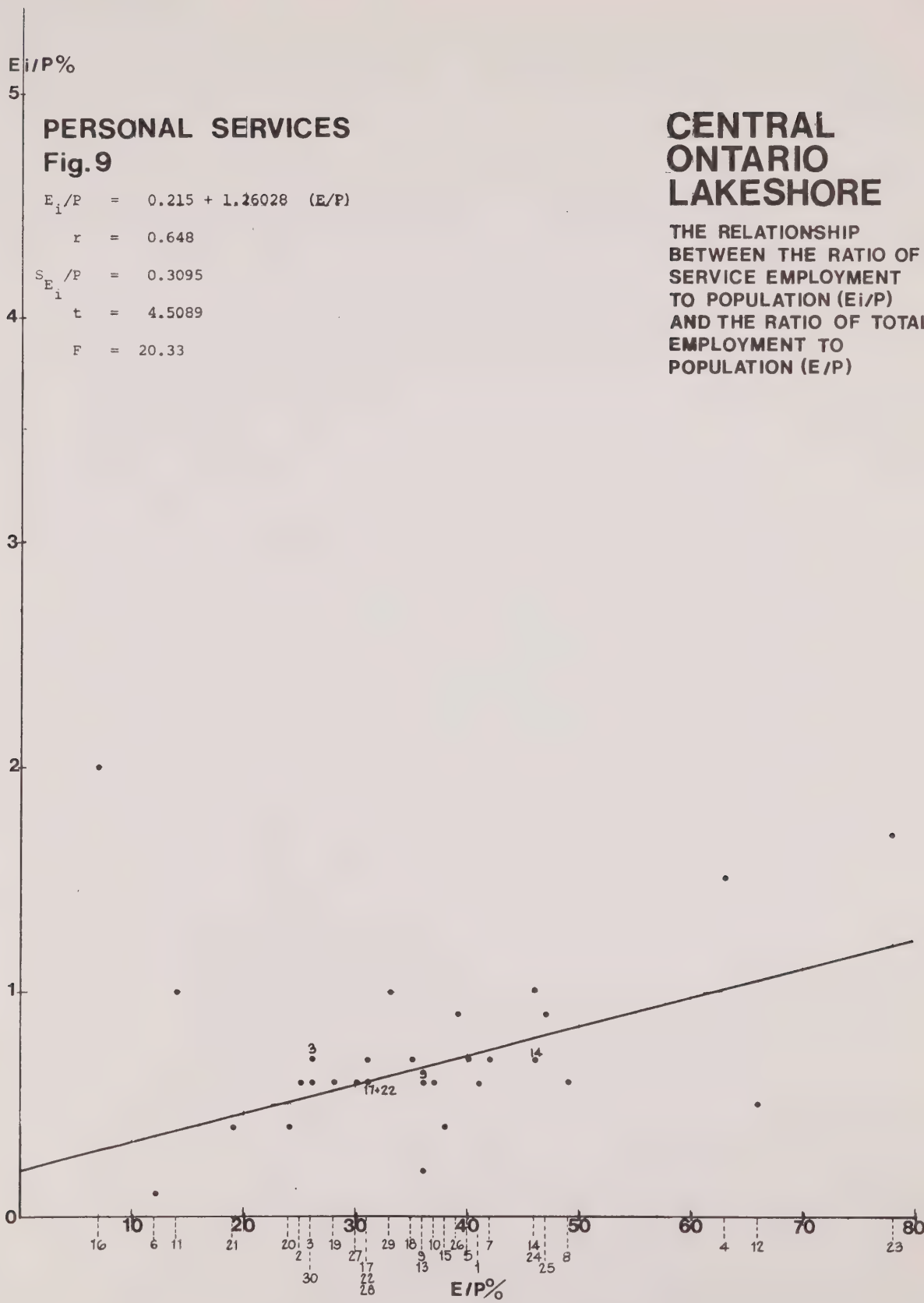
CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)

10 6 11 21 20 3 19 27 29 18 10 26 7 14 24 25 8 4 12 23

30 17 22 28 13 15 5 1 9 11 22

$E/P\%$



Notwithstanding the deficiency in predicting the larger part of the variation, the observed distribution, (Figure 9) does permit the assessment of average tendencies in employment rates in the relevant activity rate range of 30% - 42%. The average rates tend to be as follows:

Urban Place Activity Rate (E/P)	30	36	42	
Personal Services Employment Rate (E_i/P)	.59	.67	.74	⁰ / ₀
<u>Services - Accommodation and Food</u>				

A significant correlation coefficient of 0.62 was obtained between employment rates for accommodation and food services and urban place activity rates (Figure 10). Approximately 38% of the variation in employment rates is explained. The standard error of the estimated E_i/P is 0.463% about a mean observed value of 1.046%. The simple linear equation does significantly explain variations in the accommodation and food employment rates.

Again, extreme values (Toronto City, Port Credit) complicate simple relationships. It is difficult to explain the high (2.3%) for Bowmanville (population - 8,947) unless a substantial proportion of local food processing or related employment was classified as service. In the 30% - 42% activity rate range there are only five observations out of fifteen, which are not well estimated by the regression line. This cluster and the level of significance of the correlation coefficient lends some confidence to average estimates in this area.

E_i/P%

5

ACCOMMODATION & FOOD

Fig. 10

$$E_i/P = 0.32956 + 1.73243 (E/P)$$

$$r = 0.617$$

$$S_{E_i}/P = 0.4627$$

$$t = 4.1459$$

$$F = 17.18867$$

4

3

2

1

0

16

10

6

11

21

20

3

19

30

27

17

22

28

29

18

10

26

7

14

24

25

8

4

12

23

E/P%

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)

16

10

6

11

21

20

3

19

30

27

17

22

28

29

18

10

26

7

14

24

25

8

4

12

23

E/P%

The following average employment rates may be supported.

Urban Place				
Activity Rate (E/P)	30	36	42	0/0
Accommodation and Food Employment Rate (E_i/P)	.85	.95	.1.05	

The regression equation gives these average expectations.

Services - Total*

Not unexpectedly the generalized relationship between service sector employment rates and the urban activity rates, as expressed by the correlation coefficient, is a significantly close one. An r value of 0.82 with $t = 7.567$ is computed for the 1971 data. Over 67% of the variation in employment rates is explained by the simple bivariate model. The mean value for employment rates was 9.29% with a relatively low standard error of 2.617%. In overall terms the regression equation is satisfactory for estimating variations in the dependent variable, E_i/P (Figure 11).

Typical extremes are found in the City of Toronto (21.4%) the service hub of Ontario and for many services, the entire country. Other atypical places are Vaughan Town with the bulk of its high employment ($E/P = 65.7\%$) in services employment. The institutional base in Milton gives this place a very high service employment rate of some 17.5%. These places have contrasting locations and functions. Their similarities are in high levels of both service and total

* As defined by Statistics Canada SIC Division 10. In the North Pickering Project Divisions 7, 9, 10 and 11 have been used. These included transportation, communications and other utilities, finance, insurance and real estate, Division 10 and local administration.

$E_i/P\%$

20 DIVISION 10

Fig. 11

$$E_i/P = 1.88421 + 17.8832 (E/P)$$

$$r = 0.819$$

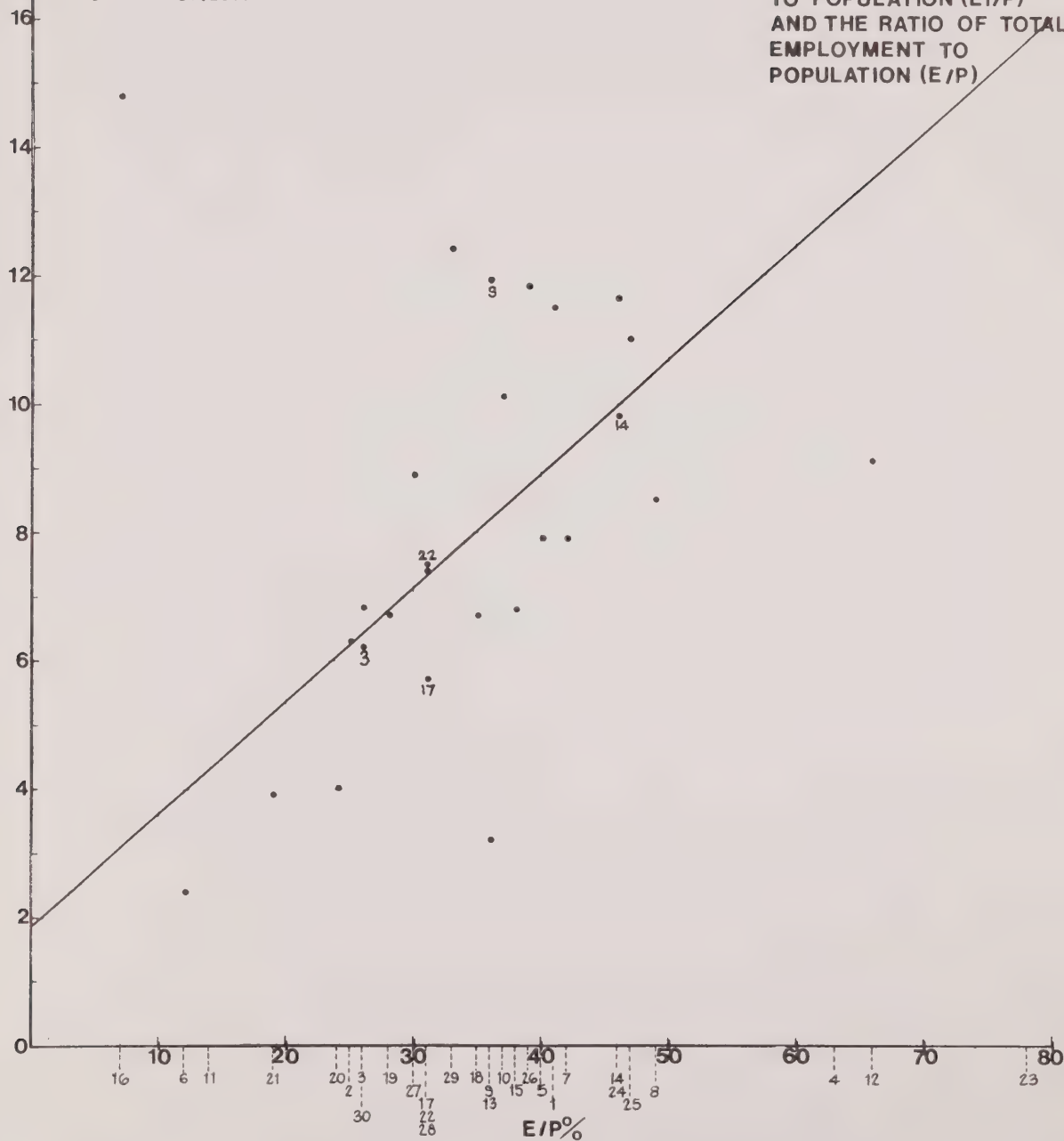
$$S_{E_i/P} = 2.6167$$

$$t = 7.5675$$

$$F = 57.2677$$

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)



employment. At the other end of the spectrum was Pickering Township with an activity rate of only 11.8% and a services employment rate of 2.4%. In contrast the dormitory communities of Port Credit and Pickering Village had very large proportions of their employment in services.

Within the caveats of the scatter observed a broad range of service (i.e. SIC Division 10) employment rates may be suggested. Within the 30% to 42% activity rate range the rate may range from 2.5% to 12.4%. Previous investigations suggest that circum-metropolitan places may be deficient in certain services, especially services to business management and some higher-order personal services (e.g. health). This is verified by the low rates in Bramalea (3.2%), Streetsville (5.7%) and Mississauga (6.8%). These places all appear as negative residuals below the regression line. Within the large range of 2.5% to 12.4% there is little to indicate that North Pickering would exceed the upper 7.0% suggested by the circum-metropolitan places just mentioned.

The regression equation is:

$$E_i/P = 1.88421 + 17.8832 (E/P)$$

Estimation gives these three possibilities.

E/P	30	36	42	
($\Sigma E_i/P$)	7.25	8.32	9.39	0/0

Adding in one standard error the following ranges may be confidently inferred.

E/P	30	36	42	
($\Sigma E_i/P$)	(4.63 -9.87)	(5.7 -10.94)	(6.78 -12.01)	0/0

Local Administration

To complete, as far as possible, the analysis of the "service sector" as defined in previous studies in the North Pickering Project's economic planning, employment in local administration is reviewed (Figure 12). The overall pattern suggests a close, positive relationship between local administration employment rates and urban place activity rates. A significant correlation is computed with a coefficient of 0.81 and $t = 7.417$. Over 66% of the variation in employment rates is explained and a relatively low standard error of the estimate (.27%) is computed.

A rate above or below 0.3% - 1.4% would be unusual. There is marked regularity of the employment rates in this sector. In fact no fewer than eight places have rates of exactly 0.6%. Another three have rates of 0.5%. Rates of .589%, .698% and 0.8% would be typical for places with activity rates of 30%, 36% and 42% respectively.

Summary

The results of the regression analysis are summarized in Table 4. Figure 13 illustrates the different sizes and internal structures of the service sectors suggested by this exercise. It is evident that estimates for wholesale trade and health and welfare services were not permissible, within the logic of the statistical method. The latter is highly susceptible to initiatives on the part of the Province. Lack of estimation here does not prove a significant handicap.

$E_i/P\%$

5

LOCAL ADMINISTRATION

Fig. 12

$$E_i/P = 0.04570 + 1.81423 (E/P)$$

$$r = 0.814$$

$$S_{E_i/P} = 0.2708$$

$$t = 7.417$$

$$F = 55.0168$$

4

3

2

1

0

CENTRAL ONTARIO LAKESHORE

THE RELATIONSHIP
BETWEEN THE RATIO OF
SERVICE EMPLOYMENT
TO POPULATION (E_i/P)
AND THE RATIO OF TOTAL
EMPLOYMENT TO
POPULATION (E/P)

16

6

11

21

20

3

19

27

29

18

10

26

5

7

14

24

8

4

12

23

30

17

22

26

$E/P\%$

THE REGRESSION ESTIMATES - TRADE AND
SERVICE EMPLOYMENT RATES

TABLE 4

		URBAN PLACE	ACTIVITY RATE	%
		30	36	42
<u>S.I.C. Division 8</u>				
Major Group 1 -				
Wholesale Trade		N. E. P.		
Major Group 2 -				
Retail Trade		3.75	4.12	4.5
	TRADE -	3.75	4.12	4.5
<u>S.I.C. Division 9</u>				
Major Group - 1				
Finance Industries		0.54	0.65	0.75
Major Group - 3				
Insurance Agencies & Real Estate Industries		0.47	0.55	0.63
	FINANCE, INSURANCE & - REAL ESTATE	1.01	1.20	1.38
<u>S.I.C. Division 10</u>				
Major Group - 1				
Education & Related Services		0.23	0.28	0.32
Major Group - 2				
Health & Welfare Services		N. E. P.		
Major Groups 3 & 4				
Amusement, Recre- ation & Religion		0.41	0.5	0.59
Major Group - 5				
Services to Business Management		0.67		0.96
Major Group - 6				
Personal Services		0.59	0.67	0.74
Major Group - 7				
Accommodation & Food Services		0.85	0.95	1.05
Major Group - 8				
Miscellaneous Services*		0.4	0.4	0.4

TABLE 4 (Cont'd)

		URBAN PLACE - ACTIVITY RATE %		
		30	36	42
COMMUNITY, BUSINESS & PERSONAL SERVICES				
Total - 1**		3.15	N.E.P	4.06
Total - 2***		(4.63-9.87)	(5.7-10.9)	(6.78-12.01)
<u>S.I.C. Division 11</u>				
Major Group - 3				
Local Administration		0.589	0.698	0.8
<u>Service Sector Total +</u>				
Estimate - I		4.75		6.24
Estimate - II		(6.23-11.47)	(7.6-12.8)	(8.96-14.2)

N.E.P. - No estimate possible

* - As in the intuitive estimate.

** - Sum of component major group regression estimates, in Division 10, except Health and Welfare. No middle-range suggested because of modest estimation in business services sector.

*** - Separate regression estimates for S.I.C. Division 10 itself.

+ - Estimate I is made up of the sum of individual major group regression estimates in Division 10 plus local administration and sum of regression estimates for Division 9. Health and Welfare should be added for comparability with other suggested ranges.

Estimate II is made up of the separate regression estimate for Division 10 as a whole, plus local administration and the sum of regression estimates for Division 9.

Four totals are given. One for the S.I.C. Division 10 based upon the summation of individual regression estimates within this Division. Another is based upon the analysis of that sector as a whole. The third total combines the first with most of Division 9 (finance, insurance and real estate) and local administration. The final total combines Division 9, the regression estimates for Division 10 as a whole, and local administration. The latter two totals are the more relevant estimates for North Pickering. These approximate the "service sector" used in previous urban systems and related economic research in the North Pickering Project.

As no statistical estimate for health and welfare services was possible the intuitive estimate (2.8%), previously generated, may be used to make the two service sector totals comparable. The final service sector estimates are therefore

Urban Place Activity Rate (E/P)	30	36	42	
Service Sector Employment Rate ($\sum E_i/P$)	<u>Estimate</u>			0/0
	I	7.55	N.E.P.	9.04
	II	(6.23-11.47)	(7.6-12.8)	(8.96-14.2)

As can be seen from the matrix the logic of increasing service employment rates with increasing urban activity rates is maintained. In addition, the estimates from the summation of service sector components (in Estimate I) fall within the ranges established by the aggregate analysis of Division 10. There is consistency in the estimates.

The estimates from the aggregate urban systems analysis exercise produced four possibilities for North Pickering.

E/P	30	36	
	7.56	9.07	0/0
$\Sigma E_i/P$	7.83	9.4	

The intuitive inspection in the first section of this Appendix suggested a rate of around 9.7%. There is very considerable consistency between these three approaches--the urban systems analysis, the intuitive inspection and the statistical analysis.

For the 30% urban activity rate the urban systems analysis (7.56-7.83%) and the Estimate I (7.55%) of the regression exercise are almost identical. They both fit into the range of 6.23-11.47% suggested by the statistical Estimate - II. The intuitive inspection did not take account of varying activity rates. The 9.7% is therefore regarded as a high estimate within the context of a 30% urban activity rate.

For the 36% activity rate case the intuitive, one statistical and the urban systems estimates all centre around 9%. There are two outputs however which suggest that this is still a relatively high estimate.

1. Due to the data constraints operating when the urban systems analysis exercise was being completed the *regional* sectoral-split patterns were maintained in the lakeshore-metropolitan setting. They were left as a likely, but unknown, overestimate of the service sector.

2. The statistical Estimate - I, the service sector components approach, gave an estimate of 9.04% for the 42% urban activity rate. While an estimate for the 36% could not be reliably generated for Estimate - I, the progression of all estimates suggests a direct relationship between the service employment rate and the urban activity rate. This suggests a rate between 8% and 9% when the activity rate is 36%.

For these reasons a service employment rate of 9% at the 36% urban activity rate is regarded as an upper estimate.

At the 42% urban activity rate a 9% service employment rate is more than likely, little more than a minimum. This interpretation is supported by the urban systems (upper) estimate of around 9% for the 36% activity rate, the intuitive and both statistical estimates. *However the literature review and an analysis of urban economic pattern in the Central Ontario lakeshore all point to a relative deficiency in service employment rates in circum-metropolitan places. The lower rate of 9% is a realistic prospect.**

Conclusion

The purpose of this technical appendix was to explore more fully the nature of the service sector in the urban economic environment of the Central Ontario lakeshore. The

* However, adding in a small increment for "transportation, communications and other utilities" and Div. 9, MG.-2, employment may be expected to support the rate of 9-10%.

specific objectives were to detail the service sector to a level commensurate with the information available for the manufacturing sector and to ascertain the likely mix of service employment in North Pickering under various activity rates.

The statistical analysis has not purported to explain the spatial incidence of varying levels of service employment. Associated patterns, not causes, have been inferred. The urban activity rate was used not because it is the best explanant of changing service employment rates but because it is an index of the level of urban employment. As such, it was the measure used in economic planning research in the Project to gauge the degree to which live/work and related objectives might be met.

The results of this and previous research suggests that the regression analysis summarized in Table 4 may be used as a guide to the possible make-up of the trade and service sectors of the New Community over the next decade. The analysis also indicates that with possible urban activity rates of 30% and 36%, service employment rates of around 7 - 8.5% are likely. With an activity rate of 42% a service employment rate of 9 - 10% is suggested, as a likely "market" scenario for North Pickering.

PART III

THE "IDEAL" SCENARIO

P A R T I I I

THE "IDEAL" SCENARIO

A working version of an "ideal" picture of employment for North Pickering, given the New Community's location within COLUC, has been postulated as follows: (See Page I-18 of Part I of this Report)

Secondary Employment	.20	=	approx. 15,000 jobs
- manufacturing			
- wholesale and construction			
Retail employment	.05	=	" 3,750 jobs
Service employment	.17	=	" 12,750 jobs
	.42	=	" 31,500 jobs

This scenario is "ideal" in the sense that it would meet Objective (ii) by providing a wide range of job opportunities in office, technical, professional and industrial employment. The same number of jobs is retained as in the "market" scenario. This is the number required to balance the jobs available with the estimated size of the resident labour force for the New Community. The major difference between the two scenarios is that the number of service jobs postulated in the "ideal" scenario has been considerably increased and the number of jobs in secondary employment correspondingly reduced.

Secondary Employment

The number of component points for secondary employment which has been postulated in this scenario is a minimum figure. It has been drawn from the lakeshore scenario, with an urban place activity rate of only 30%, derived by urban systems analysis to illustrate extreme metropolitan dominance (see page I-15 of Part I of this Report). This

proportion of secondary employment should not, of course, be construed as "ideal", either for North Pickering or for any other place. It merely represents a way of postulating a maximum amount of service employment for the New Community.

Since it is in this sense, a minimum figure, it is unlikely that the New Community could expect to provide the required number of jobs by including a smaller component of secondary employment than this. Since the analyses and assessment necessary to construct the "market" scenario have also demonstrated that the New Community could easily increase its share of secondary employment, it is clear that there is room for flexibility here. If the rather high component of service employment postulated in the "ideal" scenario could not be fully implemented, then any deficiency in the total number of jobs could be offset by increasing the number of secondary jobs.

The concept of an urban place within COLUC; other than Toronto, implementing such a strong and diversified service sector is an innovative and exciting challenge. The attempt can be expected to provide valuable experience which may contribute to the development of the overall COLUC concept, since this calls for, among other things, the wider but selective dispersal of service activity.

Retail Employment

This component is unchanged from the "market" scenario. On the basis of present information it would require some enhancement. If other strategies designed to implement the "ideal" scenario are successful, then the retail sector may also benefit.

Services Employment

This is where the difficulty lies. In this "ideal" scenario, the services component has been increased by 8 points above that postulated in the "market" scenario, in face of the traditional concentration of COLUC's service employment sector in downtown Toronto.

Studies which have been made of this problem indicate that, for several reasons, the New Community may have less difficulty in attaining this ideal if the N.T.I.A. were to develop along the lines originally envisaged. The tentative dispersal of service activity from downtown Toronto which is occurring includes the beginnings of a service sector in the vicinity of Malton. However, the physical constraints of an existing urban place may make it difficult to deliberately structure the airport impact adjacent to Malton, into a location designed to concentrate and attract the service industries. But, if the hotels, restaurants and convention facilities which a major airport is likely to generate could be captured by the New Community for its central area, then this activity could be consciously structured to considerably enhance the New Community's central area and make it attractive as a location for the higher-order services. In addition, many business and management service establishments require to be in proximity to hotel and restaurant facilities for the convenience of their clients. At the same time, many professional and management employees travel by air quite frequently. If this meant flying out of Malton, then obviously North Pickering

is a less convenient location than downtown Toronto. But if North Pickering is also adjacent to a major airport, then the situation may be radically different.

In addition, the presence of a major airport at North Pickering may add significantly to regional travel pressures and so contribute to the early provision of rapid transit facilities between the airport and downtown Toronto. If this rapid transit facility also served the central area of the New Community, then its business community would have fast and convenient access to the business community in downtown Toronto. This is important because business management service personnel require frequent personal contact with their counterparts in other service firms. It should be added that the #401 and the Don Valley Parkway presently permit an off-peak driving time of approximately 25 minutes from the proposed site of the New Community's central area to downtown Toronto. To most of the service firms which have already dispersed within Metropolitan Toronto, this seems acceptable, but obviously the connection would be greatly enhanced if rapid transit facilities were available.

Presently, the only significant services concentration in the Toronto region, except downtown Toronto, is in Don Mills, which is linked with downtown Toronto by the Don Valley Parkway and with Malton by Highway #401.

For discussion purposes, it is useful to disaggregate the services component of the "ideal" scenario as follows:

III-5

	<u>%</u>	<u>Jobs</u>
Total Services Sector Estimate, from the "market" scenario (increased by 1 component point); mostly Personal and Convenience Services	10.0	7,500
Additional Employment possible in "Accommodation and Food Services" - Hotels, Restaurants and Convention Facilities	2.0	1,500
Additional Employment in Business Management Services	<u>5.0</u>	<u>3,750</u>
	17.0	12,750

The 10 component points, principally in personal and convenience services, is taken from the "market" scenario with the addition of 1 percentage point as in the final regression estimates. (See Appendix, p. A-33.) The rationale for assuming that the New Community might enhance its service sector by an additional 2.0 component points if it garnered the bulk of the hotels, restaurants and convention facilities likely to be generated by a major airport, was also provided in the "market" scenario. The true size of the problem then is to provide an additional 5.0 component points or 3,750 jobs in the higher-order services. Two independent studies of the problem of meeting this objective were made.

The major objective of Lowry Model Analyses, Phase II was "to examine in some detail the probable distribution of service employment within the Oshawa sub-region and to test the viability of various proposals for articulating service employment within the sub-region, particularly with respect to the service employment of North Pickering". For this purpose, population and employment figures for the sub-region were drawn from three scenarios prepared for the COLUC Task

Force. The analyses, of course, were based on the assumptions of the model and those of the regional planning employment and population distributions which it used. Twenty alternative development strategies were analysed. The results of three of them (No. 4, 10 and 16), with the basic assumptions enumerated below, indicated that under these combinations of circumstances the service employment target for North Pickering could be met.²⁹

Basic Assumptions - Development Strategies
No. 4, 10 and 16

North Pickering Population (1986/91)	N.T.I.A.	Oshawa/Whitby Population (1986/91)
80,000	Major International Airport	180,000
80,000	"	180,000
80,000	"	300,000

Because of the importance to the Metropolitan Toronto Planning Department of knowing the location trends in the service industries, the Department joined the North Pickering Project in sponsoring a special study of the potential future distribution of the service industries in the Toronto region.³⁰ For North Pickering, the results of this study are, at best, cautiously optimistic.

29 See, Lowry Model Analyses of North Pickering, Phase II, B.G. Hutchinson, P.Eng., Waterloo, North Pickering Project, 1974.

30 Study of the Potential Future Distribution of Service Industries in the Toronto Region, Peat, Marwick and Partners, and IBI Group, North Pickering Project and the Metropolitan Toronto Planning Department, Toronto, 1975.

The Report indicates that firms which have decentralized find a reduction in the commuting time of their employees and feel that this is a desirable objective. However, some of these firms have experienced problems related to the availability of housing in the vicinity of the decentralized office location. As a New Community, North Pickering can set out to provide appropriate housing. For service employees who choose to both live and work in the New Community, obviously commuting time is reduced to a minimum.

Decentralized firms have also expressed satisfaction with their proximity to golf courses and other outdoor recreational areas, together with the fact that decreased commuting time permits additional enjoyment of these facilities. The New Community can provide this advantage.

Many decentralized as well as downtown firms commented on the need for good access to the airport. Most of the firms interviewed in the western part of the region listed proximity to the airport as one of the main factors that led them to choose that particular location. As already discussed, it is recognized that the New Community is likely to be assisted in reaching its objective in service employment if the N.T.I.A. expands.

Suburbanized firms commented that hotels, restaurants, clubs and shopping facilities in their vicinity were less varied and perhaps of lower quality than those available in downtown Toronto. The New Community can probably provide the required

hotels, restaurants, etc., if the airport develops to the point of generating this demand. Prospects for shopping facilities in the New Community are fair and, if the higher order services can be attracted to North Pickering, then to some extent, retail employment and service employment might have a reinforcing effect on one another.

In general, site selection outside the downtown core by service firms, is dictated by transportation, community environment and availability of labour. The Report points out that desirable communities should provide a range of accommodation types in order to match the labour profile of industry in the vicinity. Once this condition is met, employers will prefer communities with a high level of public safety and civic pride. Prestigiously planned and well located, there is no reason why the New Community of North Pickering should not meet these criteria.

Less encouraging for the New Community is the fact that, due to the significant advantages to the service industries of their concentration in the downtown core of Toronto, only a relatively small proportion of future growth in the service sector is likely to be available for decentralization.

Pursuing this thought, the Report points out that Mississauga, North York and Scarborough may have the best chance of attracting the lion's share of decentralized office employment. The Report also expresses the opinion that, because of their existing social, physical and cultural infrastructure, Oshawa and Hamilton are probably capable of facing competition in seeking to attract the service industries but that North Pickering,

Oakville, and Aurora/Newmarket, are likely to get a very minor share of the total amount of decentralized office employment. The Report therefore recommends that a regional strategy be developed to support the objective of decentralizing office employment into the higher order urban places of the COLUC region.

The Report provides guidance as to which types of service activity are potential candidates for decentralization. These are newly established or diversifying firms, insurance companies, data processing systems, research and development establishments, branches of international corporations in selected sectors, some head office functions of some very large corporations, regional sales offices, government functions, and in the case of North Pickering, if the airport expands, airport related activities.

Prior to the commissioning of this Report, a study completed for the City of Toronto Planning Board³¹ had shown that the prime demand factor affecting office space in the Toronto Core Area is proximity to related business. This is closely followed by access to transportation and access to labour.

This Study found that among the potential candidates for decentralization it was not feasible to postulate a "set" of service firms whose client relations were so close that it would be of mutual advantage to seek to simultaneously locate them in the same urban centre. However, this Study did find that lack of support facilities could be a disadvantage in a suburbanized or decentralized location. Consequently, the

31 City of Toronto Planning Board, Core Area Office Space Forecast to the Year 2000, Price Waterhouse Associates, (Toronto), 1974.

Report proposes that the availability of the following facilities within short walking distance would be a location attribute in any community seeking to attract service employment: financial, legal, accounting and related services; printing, data processing, temporary help, delivery, office machine repairing, and catering. It will now be necessary for the North Pickering Project to determine what volume of business each of these types of establishment requires in order to assess the feasibility of simultaneously locating the supporting facilities required by the service sector.

At the same time, a new community should be able to provide flexibility and innovation in the design of office buildings, good landscaping and overall prestigious design of office employment areas. These considerations too should assist in the difficult problem of attracting office and professional employment to the New Community.

The Report recommends some specific actions which should assist North Pickering in attracting the service industries: provision of a balanced amount of housing by cost and type; provision of good transportation to downtown and the rest of the region; provision of good local transportation; provision of amenities in the central area, including shopping, hotels, restaurants, cultural and recreational facilities; early provision of office space in the central area and an active marketing policy to attract tenants; selection of a site for the central area which offers maximum prestige and visibility; ability to lease office space; concerted advertising of major achievements; concentration of marketing

efforts on potential candidate firms and, among these, on firms which can act as catalysts by attracting other firms to their vicinity; the installation of a high level of municipal services; and a special effort to attract manufacturing plants, since some large manufacturing companies may be interested in decentralizing some portion of their office functions to the vicinity of one or more of their factory functions. As a New Community, North Pickering should be in a position to implement most of these strategic proposals.

In summary, attracting office, technical and professional employment to North Pickering will be difficult but not impossible. However, it may not be possible to attract the total number of this type of job which it would be ideal to have in the New Community. Consequently, the "ideal" scenario should be regarded as indicative. Any steps which can be taken towards achieving it are valuable and each such step may improve the probability of taking the next.

Industrial Land Requirements

The 15,000 industrial jobs included in the "ideal" scenario require approximately 1,000 industrial acres and these can be comfortably provided within the New Community. To the extent that the New Community is successful in attracting service employment while its 1,000 industrial acres are being occupied, the need to increase this industrial allocation will clearly be reduced.

Service employment densities are approximately 7-14 times greater than industrial employment densities. North Pickering could expect to accommodate its "ideal" amount of service employment

within its central area and within other service areas, for which planning provision has already been made. Were the "ideal" scenario to be attained therefore, no problem of land use requirements would arise.

The Goal of a Live/Work Community

With good strategic planning, North Pickering should be able to solidly ground its live/work community on the "market" scenario. If reasonable progress is made towards implementing the "ideal" scenario in say, the first ten year's of the New Community's existence, then there are grounds for suggesting that as the second generation of residents enters the labour force a reasonable choice of job opportunities for them will be opening up in their home community thus making possible a continuing live/work relationship.

Government
Publication



Ministry of
Housing

Hon. Donald R. Irvine, *Minister*
R. M. Warren, *Deputy Minister*